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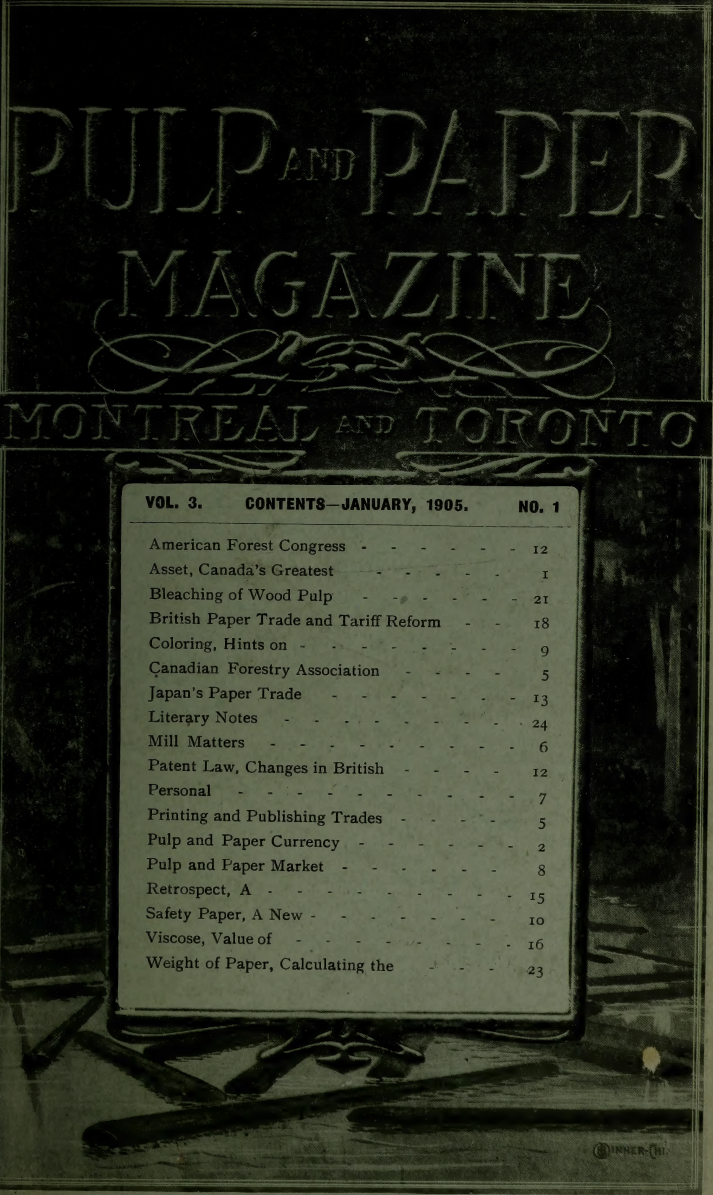
PULP AND PAPER MAGAZINE

MONTREAL AND TORONTO



VOL. 3. CONTENTS—JANUARY, 1905. NO. 1

American Forest Congress - - - - - - - 12
Asset, Canada's Greatest - - - - - - 1
Bleaching of Wood Pulp - - - - - - - 21
British Paper Trade and Tariff Reform - - 18
Coloring, Hints on - - - - - - - - - 9
Canadian Forestry Association - - - - 5
Japan's Paper Trade - - - - - - - 13
Literary Notes - - - - - - - - - 24
Mill Matters - - - - - - - - - - 6
Patent Law, Changes in British - - - - 12
Personal - - - - - - - - - - - 7
Printing and Publishing Trades - - - - 5
Pulp and Paper Currency - - - - - - 2
Pulp and Paper Market - - - - - - 8
Retrospect, A - - - - - - - - - - 15
Safety Paper, A New - - - - - - - 10
Viscose, Value of - - - - - - - - 16
Weight of Paper, Calculating the - - - 23

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INDEX TO ADVERTISEMENTS.

Beloit Iron Works 21
Benson & Co., W. T. 8
Bentley & Jackson 13
Bertrams, Limited 4
Black-Clawson Co. 5
Bowater & Sons, W. V. 24
Bredt & Co., F. 8
Brunner, Mond & Co., Limited 16
Canada Paper Co. 23
Canadian Oliver Typewriter Co. ... 18
Canadian Rubber Co. 6
Carrier, Laine & Co. 6
Castle, Gottheil & Overton 7
Cheney-Bigelow Wire Works 12
Christie, J. 24
Christie, Limited, George 3
Cousland & Co., A. 8
Eastwood Wire Mfg. Co. 2
Emerson Mfg. Co. 11
Fairbanks Co., The 11
Fleming & Co., W. A. 8
Freese, Jean 3
Hamilton Mfg. Co., Wm. 17
Hardy, George F. 7
Hawksworth, Alfred 10
Hay Knife Co., Peter 18
Hough, R. 24
International Pulp Co. 7
Jenckes Machine Co. 10, 22
Johnson & Sons, Limited, C. H....... 4
Kenyon & Son, James 15
Klipstein & Co., A. ....
Kimball, Herbert S. 7
Little & Walker 7
Massachusetts Fan Co. 18
McOuat & Son, T. 16
Paton, Thomas L. ....
Philadelphia Clay Mfg. Co. 7
Porritt & Sons, Joseph 8
Porritt & Sons, Limited, Samuel.... 24
Porritt Bror. & Austin 4
Perrin & Co., Ltd., Wm. R. 16
Pringle & Son, T. 7
Pusey & Jones Co. 14
Quebec & Lake St. John Ry. 7
Reich & Co. 16
Sandusky Foundry and Machine Co.. 16
Seymour & Guest 7
Sheldon & Sheldon 19
Smith, S. Morgan 23
Snell, Samuel 18
Union Screen Plate Co. 3
Vogel, C. H. 7
Wallace-Jaastad-Drewsen 16
Wertheim & Co., A. 20
Waterous Engine Works Co., Ltd... 22
Whittaker, Richard 9
Wilson, Paterson & Co. 10
Winn & Holland 16
Wurster, Dr. C. 14
Young, J. S. 23

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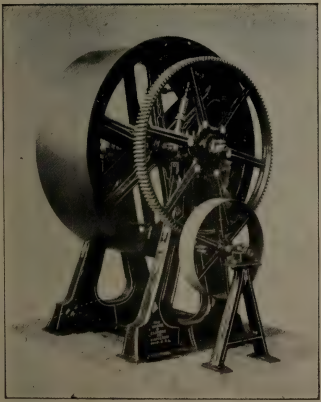

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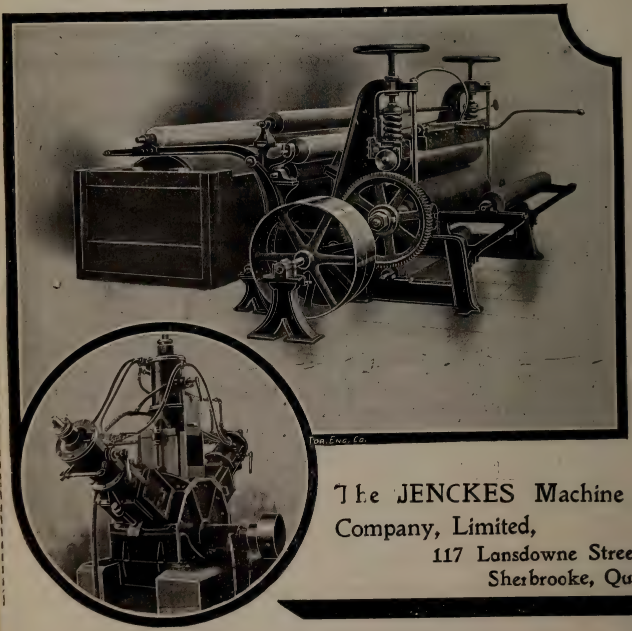

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THE

PULP AND PAPER MAGAZINE OF CANADA

VOL. 3.—NO. 1. TORONTO, JANUARY, 1905. $1 A YEAR
SINGLE COPY 10C.

Pulp and Paper Magazine

A monthly magazine devoted to the interests of Canadian pulp and paper manufacturers and the paper trade issued between the 15th and 20th of each month.

SUBSCRIPTIONS: Canada, Great Britain and the United States, $1 a year; to Foreign Countries, 5s. a year.

Changes of advertisements should be in the publishers hands not later than the 10th of the month, and, where proofs are required, four days earlier. Cuts should be sent to the Toronto office, by mail, not by express.

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THE GREATEST ASSET OF CANADA.

Upon the preservation of our forests depends not only the future of our pulp and paper industry, but every other industry related directly or indirectly to the occupancy of the land. It has been shown that constancy of the rainfalls and the steady flow of rivers, as well as immunity from disastrous freshets, are alike dependent on the forests, especially around the sources of rivers and their tributary streams. An uncertain or deficient rainfall means drought and aridity, and prosperity or adversity hangs upon our trees. This is especially true of a country situated geographically as Canada is; and the reckless waste of timber in the old settled parts of Canada is already bringing its nemesis here as in the United States. Statesmen of the latter country are now more widely awake to the vital connection of forest restoration with the future existence of the nation than appears to be the case in Canada, where some of our public men are gambling, so to speak, with the inheritance of our children. It is true, as seen by the following statistics, that Canada has the greatest forest area of any country in the world. But it is also true that the chief areas of these forests are at present inaccessible to the people, either for the purpose of regulation or consumption, and are therefore non-existent, so far as their use is concerned. It is equally true that these northern forest areas are so situated that they cannot ameliorate the disasters that are being brought upon the peopled and cultivated areas of southern Canada by the stripping of the woods from the land. Therefore, it will be well for us if those who control the public policy of the country do not continue in their dream while the scientists and politicians of the United States are strenuously endeavoring to save their land from the curse of forest barrenness. Some of the best heads in the country were in conference at Washington on the subject this month, including

✓

railway men, representatives of mining and manufacturing companies, as well as scientists and men of public affairs, and President Roosevelt himself was present to urge the policy of forest restoration. The example of European countries has shown that one of the most profitable uses to which some classes of land can be put is in growing timber, and keen Americans now fully appreciate the double benefits of scientific forestry.

It is comforting to think that except in one or two provinces our case is not so bad as that of the United States, and it only needs common precaution to restore the rain distribution of former times and the rivers to their former levels, and at the same time to recreate a lost source of wealth.

It may be interesting to note the forest areas of some of the leading timber countries of the world. The acreage is estimated in round numbers, as follows:

	Acres.
Canada	799,000,000
United States	450,000,000
European Russia	527,000,000
Norway and Sweden	58,000,000
All Europe	720,000,000
India	140,000,000
Australia and New Zealand.	40,000,000
Japan	28,000,000

Of this forest area much is not easily accessible, and in view of this fact and the inroads made upon accessible forests by the ever-increasing demands of manufacturers and the railway and mining interests, not to speak of the enormous increase in the consumption of wood-pulp paper, it can truthfully be said that the question of forest maintenance constitutes the most vital problem in the material interests of Canada. Our statesmen should, therefore, be deeply interested in the work of the Canadian Forestry Association, which holds its sixth annual convention in Quebec in March next.

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Pulp & Paper Currency

The revival in the textile trade of Lancashire has had a noticeable effect on the paper trade in the Old Country. One paper firm has turned two machines on paper for textile goods where none were working for many months past, and other mills making wrapping papers, paper box board, and other goods used in the textile trades, report similar increase in business.

The United States has an act of Congress framed to prohibit unlawful monopolies and restrictions upon trade, otherwise known as the Anti-Trust law. The first action taken by President Roosevelt to put this law in operation since his election, bears upon the paper trade. The case is that of the United States against the General Paper Co., and was opened at St. Paul, Minn., in Christmas week. The petition alleges that competition had been restricted by this combination, and the sale and distribution of paper restricted, news print particularly being increased about 50 per cent. It further alleged that no dealers or newspapers, or other consumers in the territory west of the Mississippi, with the exception of certain newspaper publishers in St. Louis and Chicago, could purchase any paper except directly through the General Paper Company, and then only upon terms dictated by the latter. The progress of the case is being watched with keen interest by both paper-makers and publishers.

"Derb," in a letter in the Paper Mill on this case makes some points which, intended as a defense of the General Paper Co., tell strongly against the contentions of other writers in the same paper, when minimizing the extent of the dependence of United States mills on Canada's pulp wood and pulp. Referring to the prices charged by the International Paper Co., he says: When these news paper manufacturers were operating their plants as individuals, six years ago, they were getting for their white news paper delivered in the press room, 1.50 to 1.70 cents a hundred pounds, a little over 1½ cents a pound for their paper, and at that time they were cutting the pulp wood from their own forests, or nearly all of it. To-day nearly one-half of the pulp wood used in the manufacturing of paper by this company is imported from Canada. When these manufacturers were cutting wood from their own forests, the cost was on an average from $4 to $5 a cord. They are importing it to-day from Canada, at a cost of not less than $11 a cord laid down in their mill; and if they could not pay a dividend six years ago, receiving from the publishers a little over a cent and a half a pound, what is the effect of the increased cost of manufacturing paper to-day over that of six years ago? To-day the publishers are setting up a hue and cry that the news paper manufacturers are robbing them, when they are charging them less than 2 cents a pound for their white paper, laid down in their press room. I also wish to state that these four large newspapers that have withdrawn from the International Paper Company have gone into paper mills, which, with the exception of one mill, import nearly all their pulp wood from Canada.

What with the action taken by the Attorney-General of the United States against the General Paper Co., and the famine in domestic pulp, our neighbors over the border are having some warm discussions on the subject of pulp and paper. Don C. Seitz, manager of the New York World has taken a hand in this, and has a long letter in the Paper Trade Journal, in which he makes some statements that are apt and true, and some that are not correct as to facts and figures. He appears to accept as correct the statement of another trade paper that pulp-wood imported from Canada costs an average of $4.36 per cord. This price is estimated from the Canadian Government returns of quantities and valuations, which, as we have before shown, are grossly understated. To show this one has only to state that even in the Saguenay region as high as $8 a cord has been paid for rossed wood this winter, and $7.50 to $8 would be gladly paid along the Ottawa by some of our own mills if they could get any at all. The situation out of which this agitation arises is simply that there is an almost world-wide famine of pulp, and the prices which paper makers have to charge have served to raise the old suspicions and antagonisms between them and the publishers of the big dailies. The paper makers on their part have at last had to confess, privately, if not publicly, that they are indebted to Canada for at least 30 per cent. of their pulp and pulpwood, and that if it were not for the supplies they are now getting from this country the paper trade of the States would be paralyzed, and there would be some action on the part of Congress more important than a mere suit against the General Paper Co. One paragraph in Mr. Seitz's letter is interesting: "There are vast quantities of spruce in the Maritime Provinces of Canada that can be brought to the more eastern of the American ports and laid down for $5 per cord. Pulp can be ground in Canada at a low cost, and the duty is sure to be removed. There are also some large, undeveloped water powers within a very few miles of United States Atlantic ports, and if sufficient pulp cannot be obtained from Canada, and if by any chance the duty should not be removed, this Canadian wood, rossed and all ready to grind, can be delivered at some of these water powers not to exceed $6 per cord. That is what must be done, or else there may be no limit to the price the publishers may be compelled to pay. The publishers have been playing into the hands of the trust too long. Now let them act together, and cheaper white paper will certainly be the result." The question that naturally arises is, why do not these big dailies who have unlimited capital, put up modern pulp and paper mills, and so relieve themselves; or, why do they not follow the argument to its logical conclusion and advocate free trade, under which system they could have the whole world for their source of supply, and so get the cheapest that is to be had. The big newspapers of the States make a loud and bitter cry when their own corns are trod on, and they dwell on the iniquities of paper manufacturers who demand exorbitant profits under the shelter of high tariffs, but they do not see the benefit of giving the people at large a clear view of the advantages of the same freedom of purchase they claim for themselves.

There are three pulp mills now idle in Nova Scotia which United States newspapers can acquire, but when they come to look over the ground in the Maritime Provinces, and even in Quebec and Ontario, they will find that the number of new pulp-wood areas which have ample water power, and can be got at without the expense of building a railway to get at them is smaller than they imagined. United States pulp and paper mills have already got such a large number of the best propositions in Canada in pulp areas and water powers that outsiders get an exaggerated idea of the number yet remaining at points from which the product may be marketed.

An important meeting of Canadian pulp manufacturers was held in Montreal on the 18th inst., the following companies being represented: The James MacLaren Company, the Chicoutimi Pulp Company, Laurentide Paper Company, The E. B. Eddy Company, Jonquieres Pulp Company, Lake Megantic Pulp Company, Canada Paper Company, Chatham Pulp and Paper Company, Montmagny Pulp Company, J. R. Booth, Ouiatchouan Falls Pulp Company, Jacques Cartier Pulp and Paper Company, Jos. Ford & Co., Price Porritt Pulp and Paper Company, Belgo Pulp and Paper Company, Northern Mills Company, Rolland Paper Company, St. Raymond Pulp and Paper Company. After discussing the pulp-wood and pulp situation it was unanimously decided that in the interest of the Dominion, and especially of the Province of Quebec, legislation should be enacted to prohibit the export of logs and pulp-wood, and a special committee is now preparing a petition to lay before Parliament at the present session to that end. Judging from the enquiries that have come from various quarters of the United States as to the result of this meeting, American pulp and paper manufacturers are beginning to anticipate that the era of reckless exhaustion of Canadian pulp lands must come to an end, and that the pulp-wood policy of Canada must now be considered as a domestic question—a case of self preservation.

* * *

CANADIAN FORESTRY ASSOCIATION.

The annual meeting of the Canadian Forestry Association will be held in the city of Quebec on the 9th and 10th March next. So far as arranged, there will be a morning session on Thursday the 9th, for receiving reports and discussion of general business, and also such papers as the time will permit of. In the afternoon, if it can be arranged, there will be a trip on the ice-breaker Montcalm, and in the evening there will be a session with papers or addresses illustrated by lantern slides. Friday morning and afternoon will be devoted to papers and discussions, and on Friday evening there will be a dinner given by the Quebec members of the Association, to which all those attending the meeting will be invited.

As the fires during the past year in British Columbia have been serious that subject will be discussed. There will be papers on it by Prof. R. W. Brock, of Queen's University, who was in charge of a Geological Survey party in that province this year, and from J. R. Anderson, Deputy Minister of Agriculture from British Columbia. Jas. Leamy, Dominion Crown Timber Agent, of New Westminster, is also expected to address the meeting.

There will be a paper on the prairie district work of tree-planting. From Nova Scotia, the Hon. J. W. Longley, Commissioner of Crown Lands, is expected, who will give information in regard to the fire-fighting system recently established in that province. New Brunswick will be dealt with by T. G. Loggie, of the Department of Crown Lands, who has done extensive survey work for that Department.

A large part of the programme will be taken up by subjects of special interest to the Province of Quebec, for which E. G. Joly de Lotbiniere is making arrangements. It is probable that the pulp industry will be given special prominence as that is a matter of the highest interest in the Province of Quebec.

A number of visitors from the United States will attend. Among them will probably be Dr. C. A. Schenk, manager of the Vanderbilt forest at Biltmore; Colonel Fox, president of the New York Forest Commission, and Mr. Knechtel, forester to the Commission; Austin Cary, who was formerly forester to the Berlin Mills Company, and is now in the employ of another large pulp and paper company, and R. F. Williams, Mr. Cary's successor with the Berlin Mills Company. Mr. Cary is the gentleman who, after making an examination of some limits in Canada, made the statement after he went back to the United States that the condition of our forests did not bear out the roseate statements that were sometimes published in regard to them.

The new Canadian forestry paper will be out this month.

* * *

PRINTING AND PUBLISHING.

John Haddon & Co., the Caxton Type Foundry, Toronto, announce that Thos. H. Sears, formerly traveller for the firm, has been succeeded by F. J. Baker and C. F. Crumpton, who will call on the trade early this year. The company further announce that they will pay freight on all orders for type of $25 and upwards.

The Canada Lithographing and Embossing Co. has been incorporated in Ontario, with a capital of $40,000, to acquire the assets of the Canada Lithographing Co. The headquarters are in Toronto, and the incorporators, A. E.

Poole, Geo. H. Morris, C. F. Vanhorn, L. J. Wollam, and W. J. McWhinney, all of Toronto.

The Wholesale Booksellers' and Stationers' Section of the Toronto Board of Trade held its annual meeting on the 18th inst., Richard Brown presiding. Owing to the big fire in which these dealers suffered severely, the past year was an active one only in the way of being upset and operating under difficulties. The following officers were elected: Chairman, Richard Brown; vice-chairman, George R. Warwick; secretary-treasurer, F. G. Morley; executive committee, Rev. Wm. Briggs, D.D., Messrs. George N. Morang, Thomas A. Weldon, W. P. Gundy, and S. R. Hart.

* * *

Mill Matters

The departments of the Imperial Paper Mills, Sturgeon Falls, destroyed by fire last autumn are now running full force again.

The last monthly meeting of the Canada Paper Co. was held at Windsor Mills in order to give the directors a chance to inspect the new chemical mill and other recent improvements.

An American company manufacturing building paper has sent a representative to Toronto, Hamilton, Winnipeg, and other cities with a view to establishing a Canadian branch factory. The works would occupy at least six acres of land, and a large staff would be employed.

John Fisher & Sons, of Dundas, Ont., have obtained an injunction restraining the Grand Trunk Railway from interfering with or damaging their paper mill. The company was double tracking its line, and the fillings for the road bed were injuring the firm's property.

The Rolland Paper Company held its annual meeting at the head offices in Montreal on the 16th, when officers were elected as follows: Hon. J. D. Rolland, president; O. Rolland, vice-president; R. Bedard, secretary-treasurer; directors, Hon. R. Prefontaine, J. L. Archambault, S. G. B. Rolland, B. D. Rolland, and A. Foucher.

J. R. Booth, of Ottawa, has won the final round in the law suits brought by Thos. Ahearn, of the Ottawa Electric Co. Mr. Ahearn alleged that the dam erected for Mr. Booth's pulp and saw mills damaged his riparian rights near the Chaudiere. Mr. Booth won in the two lower courts, and has now won in the Supreme Court of Canada, which affirmed that the dam caused no injury to Mr. Ahearn's river rights.

A hitch has occurred between the Government and the Backus syndicate, which proposed to develop the big water power of Fort Frances and to build pulp mills, flour mills, etc. The difficulty arises over a difference as to what should be the high water mark. The company wants 5 ft. more than the Government officials seem willing to permit. To the company the 5 ft. means an increase power of 25 per cent. The company says if an agreement is not reached by March 1st negotiations will be declared off.

On the Metapedia river, about half way between Amqui and Salmon Lake stations, Odilon Mignault, the postmaster at Moulin Mignault, County of Rimouski, is developing a water-power with the object of equipping a pulp mill. The dam will furnish 200-h.p. and more can be developed if necessary, as the course of the river and nature of the bottom are favorable to safe dam construction. The village has telephone communication, and way trains stop within 100 yds. of the dam site. There is ample spruce wood of good size for pulp. Mr. Mignault says local labor can be got for 50,000 logs during the winter. He would like to associate himself with a man of capital to complete the equipment, and will give details to any pulp or paper mill man prepared to take up the business.

Electricity is now used largely in paper and pulp mills in the United States. J. E. Henry & Sons, of Lincoln, N.H., have installed two large induction motors for use in their pulp mill. The larger motor is a type F, rated at 600-h.p. and will be supplied with three-phase current at 400 volts and 3,000 alternations. The motor will be direct connected to two three-pocket pulp grinders and will run at a speed of 230-R.P.M. The smaller motor is of the type C constant speed and is rated at 300-h.p. It will also be connected to a pulp grinder and will run at a speed of 205-R.P.M. Twenty-four induction motors and four 350 Kilowatt alternators, with exciters, switch-boards, transformers and detail apparatus are in use or are in course of installation in these mills, which have a capacity of about 60 tons per day. They manufacture news, high grade bag and manila paper, and their mills are models of the most progressive equipment and methods.

The promoters of the Cornwall Paper Co.'s new mill at Mille Roches are proud of the record they have made in building. Ground was broken on the 18th April last, and the first sheets of paper were run off the machine on the 8th November last. As before mentioned, the machine now running, which takes a sheet 120 inches wide, is made by Bentley & Jackson, Bury, Eng., and is highly spoken of by those who operate it. About 50 hands are now employed. The manager is Joseph Squire, late of the Toronto Paper Co. His assistant is T. Mullen, of Holyoke, one of a large family of paper makers. J. Skelton is secretary of the company, and Miss Squire, stenographer. J. Kerr, late of the Royal Paper Co., East Angus, Que., is on the road as traveller, and has already placed orders sufficient to keep the mill running for a couple of months.

The name of the Oriental Paper & Pulp Co., of British Columbia, has been changed to the Canadian Pacific Pulp & Paper Co. J. M. MacKinnon, the managing director has returned from London to Vancouver, and reports that the building of pulp mills at Swanson Bay will soon commence, and that in about a year pulp will be shipped to Great Britain. Paper mills will be built later.

A Halifax paper reports that G. D. Campbell & Company, lumbermen of Weymouth, N.S., have purchased the two mills and extensive timber limits of the Sissiboo Pulp Company, at Sissiboo, near Weymouth. The mills have been idle for the last two years, under foreclosure of mortgage. The property is a valuable one, capable of great development. It is understood the new owners will immediately put the works in operation. The mortgage on this property was foreclosed last September as noted in our issue of that month, the purchasers being the National Trust Co., acting through A. G. Ross, of Montreal. The original capital was $250,000, but more than that amount was spent in completing the plant, and the depression in trade, combined with the flood of 1901 placed the company in difficulties.

R. S. Kelsch, consulting engineer, Montreal, has been retained by the Labrador Pulp & Electric Company, Montreal, to examine and test their new hydro-electric plant at Nairne Falls, near Murray Bay, Que.

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PERSONAL.

W. Petts has taken charge of the mechanical department of the Canada Paper Co.'s plant at Windsor Mills. He was formerly superintendent for the Laurie Engine Co., Montreal.

M. J. Attland, a foreman in the Fletcher Paper Company's mills, Alpena, Mich., has come to Canada to investigate new methods of paper making recently introduced here. He expects to remain some months.

Isaac Mathers, of Halifax, who has been connected with the pulp trade of Nova Scotia, has been decorated by the King of Sweden with a Royal Order, equivalent to a knighthood, in recognition of his services as Swedish Consul.

John Cameron, master mechanic of the Royal Paper Mills Company, East Angus, was killed instantly on the 10th inst. by being caught in the machinery. The deceased was well known and highly esteemed in the town. C. A. Ring is taking the duties of Mr. Cameron.

H. M. Price, the Quebec timber merchant, well known in the pulp trade, has been elected mayor of Montmorency for the fourth year in succession.

S. Greenwood, vice-president of the Cornwall Paper Manufacturing Company, Cornwall, Ont., has been on a visit to London, and showed the Paper Maker a sample of paper they are now making. It is a wrapping; but by-and-by the mill will run on fine grade papers. Mr. Greenwood spoke most highly of the Bentley & Jackson paper machine, the simplicity and strength of the various parts being quite a surprise to the Canadian and American paper-makers who have seen it working.

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PULP AND PAPER MARKETS.

A meeting of the Canadian Paper Manufacturers' Association was held in Montreal a few days ago, when it was decided to make an advance of 10 cents per 100 lbs., on rag brown, violet brown, red brown, No. 2 manila, and No. 2 bag manila. Prices of other papers were not altered.

The pulp situation is in the main the same as last month. Since last issue a thaw and rain set in, but the subsequent freezing of the ground has brought low water again. Meantime, there is a scarcity of pulp and wood all over Canada as well as the States and in Europe. One purchaser of wood who operates in Ontario and Quebec would be willing to pay $7.50 to $8 a cord for wood to use along the Ottawa, but cannot get it, and the Eddy Co.'s sulphite mill has closed down for lack of material. Some Quebec mills are running short of such wood as can be reached without resorting to railways. Much pulp wood was stranded on the banks of streams when the high water of last season occurred and cannot be brought to the mills till spring. Frazil ice has interfered with the working of some mills. An idea of prices may be gained from the fact that a contract has been made by one Ontario mill to pay $6.50 for slabs for sulphite pulp.

Ground Canadian wood is being sold under yearly contracts for $14, f.o.b. mill, but when sold for immediate shipment as high as $20 is being paid. Sulphite has advanced about $2 a ton since last month, being now quoted at $1.85 in Canada, and $2 to $2.10 delivered to United States.

The situation is the same as last month in Scandinavia. The water in the rivers of Norway has not been so low in 56 years, and many mechanical pulp mills have had to cease operations entirely. Mechanical pulp is quoted in the London markets at £2 15s. to £3 for 50 per cent. moist, prompt delivery, and £5 5s. to £5 10s. for dry, prompt delivery.

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--Later reports from Chatham, N.B., state that though over 50 men are at work getting the pulp mill in condition it will not be turning out pulp till February.

—Georges Descoteaux and Théode Pronovost, of Three Rivers, Que., have been exploring timber lands on the Upper Gatineau, in the interests of the Union Bag and Paper Co., of the United States.

—Chas. B. Gordon, managing director of the recently formed Dryden Board Mills Company, has visited Dryden, Ont., with plans and specifications of the proposed pulp mills. A meeting of the towns-people was called to hear Mr. Gordon, who assured the people his company was in earnest as to their intention to build the mill. Since the timber concession was acquired, they had worked hard, but the money market had not been favorable. They had now, however, interested English capital, and the entire output of the mill when running had been contracted for in the British market. The capital of the new company is $1,000,000, and half of this amount is to be spent in buildings and dam. It is expected that building will begin next June.

HINTS ON COLORING.

The practical difficulties in the way of dyeing pulp up to sample, to exactly hit the right shade or correct it in the course of manufacture, can only be overcome by experience. Yet although practice only can make perfect, a few excerpts from some articles on this subject in the Papier Zeitung may be of interest and suggest useful hints. Most of the color makers supply books of samples and full directions with their colors; these, however, should not be too rigidly adhered to, as the condition of the pulp considerably influences some of the colors.

Some of the most beautiful colors, such as methyl violet, fuchsine, eosine, Victoria green and malachite green rapidly fade. For fast red or rose colors rhodamine and crocein scarlet are suitable. Ultramarine is considered fast to light, but can be replaced by Paris blue, which inclines to a reddish shade; if a greenish shade is required a suitable addition of chrome yellow is made. Unfortunately, these green colors are never so bright as those obtained with the quickly fading aniline colors. For fast yellow and orange colors chromes can usually be employed, for more intense orange with the addition of aniline orange which is almost fast. The latter alone gives a fine bright color, but with any quantity it causes frothing on the machine and interferes with the sizing.

For intense orange tones a very large proportion of dye is required, which considerably heightens the cost of production. With one per cent. of dye on the weight of the paper, a good orange can be obtained, and the cost is moderate in this proportion, but for really deep shades five or six times this quantity is required. This certain manufacturers found to their cost at a recent election, where contracts were made for handbills and posters of a deep orange shade on which black printed lettering is strongly thrown up. With such intense colors the felts, even the cylinder felts, get so impregnated with color that much time is lost in getting them clean. Although for light shades colors go a long way, for deep ones the amount required is so considerable as to increase the price to from three farthings to one penny the pound. Fuchsine, methyl violet and some green aniline dyes, go a long way and do not run expensive even when deep shades are wanted, but they are too fugitive for most purposes. Further, these and some other aniline colors which dye mechanical wood, unbleached and partially bleached cellulose and jute more strongly than well bleached stuff, so that where mixtures of this kind are employed, great care must be taken to avoid getting an unevenly dyed product. Indeed, wherever an evenly colored surface is required, unbleached material must not be mixed with the bleached.

The use of aniline colors offers no particular difficulties so long as care is taken to see that the pulp still reacts acid after the sizing; that is, that excess of alum is present before adding the dye. It is a good plan to add a little after the dyeing, so as to avoid any alteration in color. Many manufacturers buy chrome colors in form of paste to ensure their uniformity. As, however, the price of the color in this form is high, others make the color themselves. Generally for one lb. of potassium chromate four lbs. of lead acetate (sugar of lead) are taken. They are dissolved in separate vessels and then mixed together in a large tub, when the sulphur yellow coloring matter is formed. If a redder or golden yellow shade is required, less sugar of lead should be taken or the latter replaced by lead nitrate.

As the coloring matter is a compound of lead, it is heavy and rapidly settles in the tub. Great care must be taken to see that it is kept well stirred and evenly mixed, or a variety of tinted papers will result. It is cheaper and safest to prepare the color separately for each beaterful, and add it direct into the beater. It is also recommended to prepare only the sulphur yellow shades of the chrome color and adjust the other shades by addition of small quantities of Paris blue, crocein scarlet, or aniline orange. In preparing the chrome yellow each ingredient must first be completely dissolved in hot water in separate tubs. The potassium chromate solution is now poured into a third tub, and on to this the sugar of lead as rapidly as possible and in one lot, stirring all the while.

If it is poured in and mixed slowly, a redder shade is obtained, as a part of the potassium chromate combines with the sugar of lead before the rest was added. If it is desired to mix the two slowly they must first be allowed to cool. This process is cheap and rapid, and can be depended on for yielding a uniform product, but the tubs and stirrers must on no account be interchanged, but used always for their respective chemicals.

The mineral earth colors are cheap, permanent, fast and suitable, as, however, they do not go very far, they do not offer any particular advantages. They add to the weight of the paper, and must be reckoned for in the loading. They are best suited for gray or light brown shades. For this purpose it is more economical to use mixtures of black, red, and yellow colors adjusted to get the right shade, than gray or light brown colors themselves, as much less of the former will be required to produce the same depth of color. Only in special cases should the amount of mineral earth color exceed 5 per cent. of the weight of the paper, and for deeper tones dyes should be used.

With regard to economy, it is cheaper in the case of a loaded paper to use china clay and an aniline dye than large quantities of mineral earth colors. As a rule, it is sufficient if a mill has three different mineral earth colors in stock—Frankfurt black, English red and golden oxide. The latter is cheaper than other ochres as regards purity of color and efficiency. In buying chemicals purity of the material is of the first consideration, and absence of hard particles such as sand or coal dust; the latter is particularly apt to spoil the paper, and is not easily removed by filtration. Not only, in the case of the mineral earth colors, but as a general rule, the fewer the colors the better. The aniline colors, eosin, crocein scarlet, rhodamine, Rhine blue, Victoria or malachite green, auramine, metanil yellow and orange will suffice.

Where some special new color is required, it is best to send a sample to the dye manufacturer, not forgetting to mention what are the requirements with regard to strength, fastness to light, and what raw materials are to be used. The dye manufacturer is usually in a position not only to select a suitable dye, but also to give approximately the quantity which will be required, as they have considerable experience from frequent enquiries of this nature and costly experiments in the mill will be unnecessary. For green tints, chrome yellow may be used with a suitable addition of Paris blue; the latter is dissolved in water at a temperature not exceeding 110-120 degs. Fahr., and the water must not be alkaline or loss of color results. Sometimes it dissolves with difficulty, so that same mills prefer to use it in form of paste.

In using ultramarine, after well mixing with water, the whole should be filtered through as fine a sieve as possible. The finest machine wire is suitable, as the ultramarine has a tendency to ball into little masses, which leave unsightly specks or hair-like marks in the paper. For use in shading white paper, a small addition of a red dye, as crocein scarlet or better, rhodamine, is required. With cheaper papers ultramarine may be replaced by Rhine blue or Paris blue, in the latter case using more of the red dye to counteract the greenish tinge. Ultramarine should be tested as to its behavior to alum, and too large an excess of alum must be carefully avoided, as this color is sensitive to acids. If too much alum has been taken, a smell of sulphuretted hydrogen is noticeable. For the very best papers cobalt blue or smalt is still used in place of ultramarine as being absolutely permanent and fast. It does not, however, go so far as the latter, and is very expensive.—Henry P. Stephens, in the Paper Trade Review.

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A NEW SAFETY PAPER.

A new form of safety paper has been invented by James Rowan, of Ottawa, Ont. The invention relates to commercial paper, such as is used by bankers, merchants, and other business men, the object being more particularly to so prepare a paper that alterations in the condition of the paper—such, for instance, as the erasure of intelligible characters or the addition of such characters thereupon—may be readily detected. A further object is to produce a paper and ink therefor such as will not deteriorate with age and in which the fabric of the paper is not injuriously affected by ink used thereupon.

"In carrying out my invention," says Mr. Rowan, "I take my commercial paper, either in the web, ream or sheet, and pass it through a bath composed of the following substances: Three ounces of prussiate of potash, one ounce of ammonia, and ten pounds of water. The prussiate of potash may be either of the yellow or red variety; but I prefer the yellow. When the paper is passed through the bath, as above described, the ammonia in the solution neutralizes any acids contained in the paper and prevents discoloration of the paper, while, on the other hand, the prussiate of potash renders the paper sensitive to the subsequent action of an acid. The paper is then dried and is next treated or tinted to an overprint, the ink of which is composed as follows: four parts of perchlorate of iron, four parts of potassium iodid, and one part of caustic soda or potash.

"This ink is of a peculiar kind. While containing both acid and alkaline substances, and while these substances are admixed as stated, they do not combine with each other, because of the action of the mulling in oil or varnish. The oil or varnish, in other words, keeps the substances apart by separately enveloping their very small particles, yet when an acid or an alkali is applied to a paper upon which the ink is printed or otherwise applied the acid or the alkali, as the case may be, unites with the perchlorate of iron or with the potassium iodid, forming a discoloration. The prussiate of potash in the paper is also affected by acids, the discoloration being thereby increased. These chemicals are mulled in linseed oil or other suitable varnish. A little magnesia may be added, if desired. The resulting admixture is an ink and may be applied to the paper prepared as it is described in any manner, but preferably from relief-type made of wood, stone, or metal. The magnesia is not an essential element and is merely used to temper the ink—that is, it facilitates its flow upon the finished paper.

"The ammonia used in the bath is for the purpose of neutralizing any acid inherent in the paper which would otherwise tend to neutralize the prussiate of potash. When paper has been subjected to a bath in which the latter chemical is dissolved, the iron oxid or pyrogallic acid of the writing fluid used in writing a document permeates the paper better and is harder to remove, and hence paper subjected to the bath as described is more effective than paper treated to an overprint even when composed of all the chemicals compounded as an ink.

"In order to make the ink applicable to various tints of paper, suitable proportions of fuchsin or manganese may be added. For instance, when blue paper is treated to the bath above described, and then overprinted in the manner stated its blue color becomes deeper when any attempt is made to tamper with it by the aid of an acid. This deeper blue, however, does no contrast sufficiently with the origina color to render detection inevitable. After a small percentage of fuchsin has been added during the process of mulling the subsequent application of an acid to the finished paper causes a purple discoloration which renders detection certain. In like manner a small percentage of manganese may be used instead of the fuchsin when the preparation is to be used with paper having white or very light tints.

"The mulling or grinding together of the chemicals mentioned, preferably with a suitable substance for tempering the ink, this substance being preferably in the form of a varnish, serves a twofold purpose, to wit: First, it reduces the admixture or composition to a certain uniform consistency, which is about the same as that of printing ink, and second, it envelops the separate particles of the active chemicals in a covering f the tempering material or varnish. his enveloping of the particles of the ctive materials in the varnish is very mportant, for the reason that it acts s a preservative for the chemicals by voiding exposure thereof to the air and reventing volatilization of the subtances used. It also prevents direct ontact between the small particles of he chemicals used and the fibre of the aper, thus overcoming defects which ave existed in all papers of the kind eretofore produced so far as I am ware.

"In printing, different designs may be mployed, such as may be desired by he different firms for which the paper s manufactured. The design becomes onspicuous upon any attempt to tamper vith the paper. I do not limit myself o the proportions of the chemicals amed nor to the order in which the hemicals are added. Various changes nay be made in these two respects vithout departing from the spirit of my nvention. For instance, potassium iodid nay be used in the bath and the prusiate of potash may be mulled in the arnish with the iron perchlorate, or the ron perchlorate may be used in the bath, he only difference being that when preared in the several manners stated here may be a slight difference in the hade of the papers produced.

"Neither do I limit myself to the paricular substances stated, for the reason hat chemical equivalents of any one or nore of such substances may be used, f desired. The paper may be prepared y treating the paper pulp before its onversion into paper, the pulp being ubjected directly to the bath, or one or nore of the ingredients may be inorporated in the pulp, the other ingredients being applied to the finished aper."

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CHANGES IN BRITISH PATENT LAW.

On January first, changes in the British patent law went into effect as follows:—

Where an application for a patent has been made, and a complete specification has been deposited by the applicant, the examiner shall, in addition to the inquiries which he is directed to make by the Patents, Designs and Trademarks Act of 1883, make investigation for the purpose of ascertaining whether the invention claimed has been wholly or in part claimed or described in any specification (other than a provisional specification not followed by a complete specification) published before the date of the application and deposited pursuant to any application for a patent made in the United Kingdom within fifty years before the date of the application.

If as the result of this official search it appears that the invention sought to be patented has been wholly or in part claimed or described in any such specification the applicant will be informed, and will have the opportunity of amending his specification so as to confine it to so much of his supposed invention as he may desire to patent in view of the specification to which his attention has been called by the Comptroller of Patents.

The sections of the Patents, Designs and Trademarks Act which regulate the time for depositing a complete specification shall have effect as if references therein to the period of nine months were references to the period of six months.

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AMERICAN FOREST CONGRESS.

The American Forest Congress met in Washington during the first week of this month, as previously announced. The event was a very notable occasion in the history of forestry on this continent, as it was the first gathering of a widely representative character which has been held solely for the study of forestry problems. A congress was held in Cincinnati, in 1882, but was not in any degree as representative of all the interests concerned as the recent meeting in the capital. The gathering was held under the auspices of the American Forestry Association, but it was a special effort to bring together all persons interested in forests and forest products, and the response was all that had been anticipated. Delegates were present representing lumbermen, transportation companies, wood-working associations, telephone companies, mining companies, turpentine manufacturers, and many other interests. Nearly all the delegates were representative business men, the railroad companies, for instance, sending their presidents or chief engineers.

Hon. James Wilson, Secretary United States Department of Agriculture, is president of the American Forestry Association, and was chairman of the congress. He expressed the opinion that this was the best convention that has met in Washington during the fourteen years he has been in the capital.

The most important feature of the American forest situation just now is the bill that is pending before Congress on the transfer of the forest reserves from the Department of the Interior to the Department of Agriculture, so that they may be under the administration of the Bureau of Forestry. The Forest Congress passed a strong resolution in favor of this bill. The pulpwood situation did not occupy a prominent place in the deliberations of the assembly, but the influence of the congress in furthering the cause of forest preservation will indirectly affect the pulpwood question as it will all forestry interests.

The significance of the congress is thus stated by The American Lumberman: "The American-Forest Congress should mark the turning point from the days of destruction to the days of practical conservation, and if it shall fail in this it will fail in the avowed object which called it into being,"

While the congress was purely a United States affair, the following delegates were present from this country: E. Stewart, Dominion Inspector of Timber and Forestry; Mr. Ross and Mr. Trumbell, of the Department of the Interior; Dr. Robert Bell and Prof. Macoun, of the Geological Survey; Aubrey White, Assistant Commissione of Crown Lands for Ontario; and D J. F. Clark, Ontario Government Fo ester. Mr. Stewart and Mr. White a dressed the congress on the forestr methods of the Dominion and of th Ontario Governments respectively.

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JAPAN'S PAPER TRADE.

Alexander McLean, Canadian Con mercial Agent in Japan, writes fro Yokohama, under date of December 12t on the growth of the paper trade of th country:

A brief examination of the growi demand for imported printing pape which has formed a large item in th import list for ten years past, will b interesting to those who would take part in exploiting the Japanese field wi their productions. The imports of prin ing paper from all countries for the te years from 1894 to 1903, are as follow

1894 ...	$ 128,928	1899 ...	$ 379,2
1895 ...	158,899	1900 ...	1,018,4
1896 ...	361,219	1901 ...	432,0
1897 ...	428,428	1902 ...	701,4
1898 ...	1,141,657	1903 ...	495,6

The increase in the imports is due t the development of various industrie side by side with the propagation literary culture all over Japan. In 18 the total value of imports exceeded th of exports by $55,874,202; while in 190 the excess figured at $41,425,976; the forming an unprecedented record in th annals of Japanese history so far as a excess of imports over exports is co cerned. In these two years, the impor of most of the principal commodities i creased, inclusive of that of printin paper.

Although the above statistical retur clearly show a gradual increase of th imports of this paper during the te years taken as a whole, yet this do not give assurance that the increasi will continue. On the contrary, there a already indications of a non-increasi condition to be observed in the impor of some kinds of paper in 1903. The Japanese paper manufacturing companies such as Fuji-Sheishi, Oji-Sheishi, Yokkaichi Sheishi, Kobe Sheishi, and Tokio Ttahami, have commenced making all kinds of printing paper from imported pulp. These papers, although of comparatively poorer quality, are yet good enough to serve as substitute for some imported printing paper; and the more those concerned become experienced in the use of pulp and machinery, the greater in quantity and the better in quality will be the manufacture. The estimate of aggregate sales, by these five companies, of printing paper, inclusive of newspaper, by the name "zara," and also "book paper" of all grades is said to have been from one and a half million dollars (gold) to two million dollars last year. Although the quality of this paper may not be high, it is cheap, and that counts for much here, consequently the imports are almost exclusively of the higher grade.

It is from neither the United States nor Germany in this case that the greater importation comes, but from Great Britain. According to the customs returns of 1903, Great Britain exported to Japan in value $216,959, Belgium, $136,065; Germany, $53,704, while the United States has only $47,856. Prices on the imported paper corresponding to the "zara" grades vary from 4½ to 7 cents per pound (in Canadian currency), delivered at Yokohama. Goods from Great Britain generally command higher prices, ranging from 6½ to 7½ cents, and those from other countries 4½ to 6¾ cents per pound. From Canada the import of foreign paper does not cut any figure. A trifling importation of pulp last year, only $1,694 in value, is all that stands to the credit of the greatest paper-raw-material country in the world. In the paper manufacturing districts, raw material for Japanese paper is obtained from the bark of various trees, and mixed with better grades of pulp; but paper raw material is in no sense plentiful, and dependence upon importation will every year be growing more unavoidable.

The manifold uses of cardboard have naturally caused an advance in the quantity and value imported, which may be seen in the following statements:

	Quantity. Lbs.	Value (In Canadian Currency.)
1901	3,421,350	$165,289
1902	3,758,414	175,903
1903	7,618,028	345,378

Cardboard is extensively made in Japan, but it is with little exception inferior in quality and color. The imported article will have the preference so long as its better quality is continued. Here again, Canada is not in sight. The United States exported to Japan in 1903 $334,974 against $10,414 from various countries. The fact that almost the sole imports come from the neighboring States is suggestive that there is no reason why Canada with every facility available, cannot take a share of this.

As to "fancy or glaze" paper, which comes next to cardboard, the German produce is predominant in this market, followed by the Austro-Hungarian and Belgian products. This paper, for its manifold uses in Japan, comes either in colors highly glazed, or in stamped patterns of all kinds. Total imports of this paper last year are estimated at yen 447,500, or in Canadian currency $223,750, the German imports being over half the amount, say $114,660.

Imitation paper is also an important article. The native product called "Torinoko,' which is the best quality of Japanese manufacture, is being superseded by the imitation article on account of its cheap price. Envelopes, bookcovers, and printing paper for special requirement as to tenacity and perfect smoothness of surface are made of this brand. Austria-Hungary and Germany control the market, with prices varying from $4.75 to $4.83 per 100 pounds, Canadian currency.

Drawing, writing, and packing paper, as well as parchment, and match-paper, complete the list of market varieties. The match-paper is made here, and the finer drawing and writing papers are imported in only very small lots, foreign writing paper especially not being required by the Japanese, who use their own soft paper, with brush and India ink.

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A RETROSPECT.

The World's Paper Trade Review, in the last issue for December, thus summarized the wood pulp industry of the world:

The British papermaker continues to be almost entirely dependent on Scandinavia for his wood pulp supplies. The imports of Canadian wood pulp, which at one time looked as if they would rapidly increase, cannot be said to be material, Canadian mills giving more attention to the requirements of the United States. Of British imports, the arrivals from Norway and Sweden amount to 86 per cent. of the total value. The question of controlling production is one that periodically crops up amongst manufacturers in Scandinavia. Last summer it was reported that mills in Norway, Sweden, and Finland had completed arrangements whereby the production of pulp could be lessened in all three countries if considered desirable in the interests of the trade. The publication of trade statistics also came up for discussion at meetings of the Scandinavian Associations. It was agreed to establish a central office for collection and distribution, sales, stocks, selling prices, etc., and it was decided that headquarters be at Gothenburg under the direction of K. Nystrom. The Scandinavian Associations subsequently issued important tables relating to the imports and exports of chemical and mechanical wood pulp for the years 1899-1903. The figures covered Great Britain and Ireland, France, Germany, Austro-Hungary, Denmark, Belgium, Spain, Finland, United States and Canada. Recently the attention of Scandinavian producers was directed to what is considered an arbitrary action on the part of the French Customs' authorities. It appears that during the summer or dry periods some of the arrivals of mechanical wood pulp were below 50 per cent. moisture, and the officials have ruled that such pulp must pay one franc per 100 kilos. duty, or at the same rate as dry pulp. Amongst the serious fires that occurred during the year may be mentioned the destruction of the Viul mechanical pulp mill (Norway), having an output of 15,000 to 20,000 tons. The Helefos mechanical wood pulp mill, situated on the Drammen River, also sustained damage by fire, the loss being estimated at about £20,000. With the commencement of the year 1905 export duties on Swedish wood pulp come into force. The duties —50 öre on dry and 25 öre on wet chemical wood pulp, and 30 öre on dry and 15 öre on wet mechanical wood pulp —are not to be levied on wood pulp produced from wood felled in the provinces of Gothland, Vasterbotten, and Norrbotten, or in the commune of Sarna (Kopparberg). In regard to superior brands of sulphite several German mills have successfully catered for English business, the brands of the Akt.-Ges. fur Maschinenpapier-fabrikation Aschaffenburg and Cellulose Fabrik Memel being particularly familiar. In regard to the Canadian wood pulp industry, the principal exporters to the United Kingdom are the Chicoutimi Mills, which, owing to extensive additions to plant, etc., are now very large producers. English investors in Canadian wood pulp enterprises have found results very disappointing; notwithstanding, the industry is one of growing importance, and it is noteworthy that in many of the latest enterprises American capital is largely invested. British Columbia, when present schemes mature, will probably enter the ranks of wood pulp producers on a large scale. The name of Sir Alfred Harmsworth has been freely mentioned in connection with wood pulp enterprises in British Columbia, Newfoundland, and various provinces of the Dominion, but no definite purchases appear to have been made. The idea of fabulous profits in connection with the Canadian wood pulp industry has been considerably modified during recent years. Some authorities aver that to make pulp for exportation to the States and to England is by no means remunerative at times of low prices, especially in view of the gradual increase in the cost of wood. The manufacturer of paper, as well as pulp, has constantly been urged, and in this direction the Belgo-Canadian Pulp Co., of Shawinigan Falls, Quebec, backed up by Belgian capital, made arrangements to engage in the manufacture of "news," after having lost considerable money whilst solely confining their attention to the production of pulp. Several pulp mills on account of losses sustained, have been obliged to shut down. In the list of mills meeting with difficulties may be placed the Acadia Pulp and Paper Co., St. John Sulphite Co., Sissiboo Pulp Co., Maritime Pulp Co., and the St. John Pulp Co. In the Maritime Sulphite Co., Limited, of Chatham, N.B., considerable British money was invested, and the mill after being idle for a long period has lately been acquired by the Nashua Paper and Pulp Co., of East Pepperell, Mass. Scotch papermakers were the principal shareholders in the St. John Sulphite Pulp Co., Limited, Mispec, N.B., and the continual losses led to a cessation of work. An attempt was made to raise fresh capital, and the mill was restarted. Subsequently, however, a winding-up order was made against the concern, and at a sale by auction the property was acquired by the City of St. John. Another Canadian mill, under English control, is the Dominion Pulp Co., but very little information concerning this enterprise is available. In regard to the Cushing Sulphite Fibre Co., trouble manifested itself between British and Canadian interests, but with Captain Partington at the head of affairs, it is possible that the future working may show considerable improvement. Capt. Partington, by the way, has solved the difficulty of dealing with waste sulphite liquor, his process providing an effective method of minimizing the motor dust nuisance on the main roads, and also giving a size suitable for "browns," and an effective boiler composition. Considerable developments have been carried out by the Imperial Paper Mills, Limited, at Sturgeon Falls, and the pulp works and other industries at Sault Ste. Marie have been placed on a sound commercial footing.

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THE VALUE OF VISCOSE.

The production and application of viscose in the paper industry seems to have been regarded as of great difficulty, especially because the plant required has been thought to be very expensive. According to the Wochenblatt fur Papierindustrie, this is an error, as the whole manufacturing process is very simple, and expensive apparatus is not required. The greatest obstacle in small mills consists in the difficulty of transportation, and in the liability of the decomposition of the product. The yellowish color is of slight consequence, as the same is reducible by the use of clean and pure raw material and careful manufacturing. Even in very light paper the precipitated viscose causes only a slightly yellowish tint.

The production of viscose is divided into three parts: The preparation of the raw material; the change into sodium cellulose; and the production of the cellstuff carbonate, called viscose. For making technical preparations, such as viscose silk, or the solid white or colored viscoid, the use of clean cotton rags or linen waste is preferable. In case the viscose is wanted for the sizing of papers, clean wood sulphite or paper chips or clippings, free from wood, are well adapted. Even a well prepared cellstuff of lower grades of wood may be directly applied. The solution is effected in two ways; first reducing the dry cellulose by so-called disintegrators, or in the wet state in the beater, in which latter the plates and beater roll knives must be arranged to cut the fibres in short lengths, not to exceed 1½ to 2 mm. A long fibre stock would not be readily soluble, and may cause trouble by remaining partly insoluble. The finely beaten pulp may be pressed and freed from water in a centrifugal apparatus. It has been found that damp cellstuff shows better qualities than dry stock, but the dampness should never exceed 50 per cent., as in the preparation of sodium cellulose the following formula must be carefully observed; 2 parts dry cellulose; 1 part caustic soda, NaOH; 4 to 6 parts water.

In case we use 30 kg. of cellulose, we need 15 kg. caustic soda, and 60 to not exceeding 90 liters of water. The quantity of water contained in the prepared cellulose has to be deducted from the proportion of water stated in the formula; the remaining water serves for the solution of the caustic soda, which is to be added gradually to the damp stuff. In the case of small quantities the mixed pulp may be rubbed in an earthen vessel, whereby the fibres are caused to swell. After repeated stirring and rubbing, the material is allowed to rest and settle. The cellulose may then be pressed or rubbed through a sieve or screen to cause the disintegration of lumps or knots. The stuff is placed in a bottle, one-tenth part of the weight of pulp is added in the form of sulphate of carbon or ether, and the contents are then well shaken.

For making large quantities the "Kollergang" is best adapted. To the damp cellulose the caustic soda is gradually added in small proportions. The swelling of the fibres prevents the formation of a liquid mass, and after a short kneading process, the material has the appearance of bread dough. In case the stuff cannot be used immediately it should be stored in air-tight receptacles. It is, however, best to start the transformation into viscose as soon as convenient. For this purpose it is advisable to use petroleum barrels, provided with an agitator and to be hermetically closed. For the purpose of finishing small experiments, the stuff may be well shaken in closed bottles until dissolved.

After placing the pulp in the mixer, one-tenth of the weight in carbonate of sulphur is added and the stirring may be started; this may require from three to four hours, at a temperature of from 10 to 20 degrees C., but at a higher temperature of 20 to 30 degrees C. the time is reduced to from one to three hours.

A test may now be made to determine if the material is entirely soluble in water. If not so, and flakes or fibres are observed in the solution, the cause thereof may be imperfect kneading or straining, or either the sulphite salt or the time allowed for reaction was insufficient. In the first case, the fault cannot be repaired, except by straining and using the beater to refine the undissolved particles or fibres. In the other case, the trouble may be cured by an addition of the sulphite salt. A small excess of the same may cause no harm, as the gas may be discharged or collected in water-cooled pipes, and the liquid thus regained for future use.

It is best to make the viscose in separate sheds, as the sulphur carbonate is of a volatile nature, and very inflammable. Its boiling point is at 47 to 49 degrees C., and it evaporates rapidly in open vessels.

A similar process is also carried out by heating the ground fibre in a 2 per cent. sulphuric acid solution, at 100 to 140 degrees C., for several hours, and by clearing the fibres from the acid by washing, and after that by finishing the process in the above described manner. Another process consists in the addition of a 1 per cent. muriatic acid solution in the cold state, allowing an undisturbed action of the acid of from 12 to 24 hours. The sour liquid is decanted and the operation is perfected as first described. It is supposed that the conversion into sodium cellulose is facilitated by the muriatic acid, and it is also found that a smaller amount of caustic soda is required, also that the stuff gains a brighter shade.

For the purpose of avoiding decomposition, it is advisable to dilute the stuff after the gases have been freed by ventilation, or by an air pump. The water to be added should have about one and one-half times the weight of the cellulose, the latter thus representing 10 per cent. in the solution. Suppose we apply 30 kg. dry sulphite pulp, 15 kg. caustic soda, and 75 litres of water, in all 120 kg., to which we add one and one-half times the water in about 180 litres, thus gaining a solution of 300 kg. total weight, in which are contained 30 kg., or 10 per cent. of dry sulphite fibre. In these proportions the solution is best adapted for shipment or storage. The 10 per cent. viscose solution should be preserved in air-tight vessels and stored in cool rooms. At a temperature of from 0 to 10 degrees C. the viscose may be preserved from twelve to fourteen days; at 20 to 25 degrees C., a decomposition begins in six to ten days, even in air-tight vessels. Owing to this rapid decomposition, it is not practicable in many cases to procure the viscose from factories the shaking of the stuff during transportation acting injuriously, but since the preparation of the cellulose causes little trouble, expensive apparatus not being required, it appears to be advisable that the mills should make their own viscose.

The most important use of viscose is in the production of artificial silk, the sizing of paper, the making of viscoid in textile fabrics, waterproof paints, photograph plates, etc. In every instance of the application the original cellulose is reformed or extracted by the separation of the sulpho-carbonate. The precipitation may be effected by various means, either by gradual oxidation in the air, or by heat, and, finally, by additions of various substances to effect precipitation, such as acids, and by sulphates of ammonium, magnesium, or zinc.

In the sizing of paper with viscose the reaction must be caused by rapid precipitation in the beater. This process has proved to be very practically performed by using one of three sulphate salts, namely, ammonium, magnesium, and zinc sulphate. The precipitate consists of insoluble cellulose, and the separations of the sulpho-carbonates run off with the waste water.

Practical trials have shown that the following proportions are required for precipitating 100 kg. of a ten per cent. viscose solution: Either 9 kg. ammonium sulphate or 15 kg. magnesium sulphate, or 18 kg. zinc sulphate. The preference has been awarded to zinc sulphate, because the precipitated magnesium salts are not quite constant, but partly soluble in water. Only a small percentage of viscose is required for paper sizing. The sizing produces a very hard and snappy quality, showing a high degree of firmness, pliability, and tensile strength. The cost of mill-made viscose sizing is not higher than that of rosin soap.

BRITISH PAPER TRADE AND TARIFF REFORM.

Aberdeenshire, which has paper-making for its chief industry, has been the centre of some warm debates on tariff reform in Great Britain. Naturally the arguments turned largely on the paper trade. One of the speakers at Culter was Wm. Dyson, secretary of the Amalgamated Society of Papermakers (trade union), whose report on the commission sent out to the United States, under the auspices of Mr. Moseley, will be remembered.

Mr. Dyson said he was a tariff reformer from honest conviction, because he believed it would be for the best interests of himself and all those engaged in the paper trade and of nine-tenths of every trade in this country. Another reason was that the trades unionists could not conscientiously be otherwise than protectionists, because every trades unionist joined his society with the intention of protecting his interests against unscrupulous employers, and naturally he ought to combine to protect himself against unscrupulous foreigners. He was a free trader, he was not afraid of free trading with any nation in the world if it met us on the same conditions, and if that were done he was confident that the Britisher would come out first at the finish. During his recent visit to the United States he saw that it was utterly impossible for us to compete with the Americans with the tariff they put on, while our markets were open and free. The total exports of British paper for October, 1904, were 5,358 tons 19 cwts., of the value of £155,433. For the ten months from January to the end of October, 1904, our exports were 51,967 tons 14 cwts., of the value of £1,557,485. Our total imports during the same periods were, for October, 28,712 tons 3 cwts., value £386,788. For the ten months from January to the end of October, the imports were 300,458 tons 16 cwts., value £4,051,297. They would therefore see that the excess of imports over and above the exports was 248,491 tons, valued at £2,493,812. Therefore, if they took the price of labor in connection with the manufacture of a ton of paper at £2, which was a low estimate, they would find that they had lost to this country in ten months, in labor alone, £496,982, and that was apart from work that would be found for carriers, coal miners, engineers, etc. Comparing the figures for the ten months ending October, 1904, with the ten months ending October, 1902, they found they were as follows: For 1904 our imports were 300,458 tons 16 cwts., of the value of £4,051,297; for 1902, 272,036 tons 16 cwts., value £3,800,942 which was an increase in two years in imports of 28,422 tons, value £250,355. The exports for the some period were: For 1904, 51,967 tons 14 cwts., value £1,557,485; in 1902, 44,705 tons 15 cwts., value £1,380,038, which was an increase in value of only £177,447, compared with the increase in value of the imports of £250,355, or a difference of £72,908, which he thought they would agree with him was not as they should like it to be. The free import friends told them that they did not pay for this in hard cash, and that it was only an interchange of commodities. Was it? He had never yet met a foreigner that would exchange £4,051,297 for £1,557,485. Where did the difference go? It was spent in foreign countries, which gave their quota to neither our Imperial nor local taxation. It went to support foreign armies and foreign navies, which sometime might be opposed to our armies and navies. It was money spent against ourselves whichever way they looked at it. Looking further into the matter, they found that from 1882 to 1902 the production of paper in Great Britain had increased by 138 per cent., while the quantity of foreign paper had increased in the same period by no less than 680 per cent. During the first ten years, from 1882 to 1892, British production had increased by 51 per cent., and during the last ten years, 1892 to 1902, by 56 per cent. Foreign importation had increased in the first period by 240 per cent., and in the second period by 130 per cent. The proportions of foreign importations to British productions was in 1882 nearly 8 per cent., in 1892, 17½ per cent., in 1902, 26 per cent. Now, looking to the future, it was only possible to estimate the probabilities, but he was strongly inclined to think that if the fiscal policy of this country remained as at present (although great increase of productive power was going on in British mills, old machines being improved, new and larger machines taking the place of old and smaller ones), they could not expect the expansion of trade to continue at the rate of the past dozen years. He thought it would be safe to assume that the increase, say in the next ten years, would be at the rate of 33 1-3 per cent., instead of 56 per cent., and this would bring the total product of British mills to 1,000,000 tons per annum. For the same reason, they must not assume that the importation of foreign paper would increase by 130 per cent. during the next ten years. Still, if our fiscal policy remained unaltered, he thought it would be fair and reasonable to allow for an increase of 100 per cent., instead of 130 per cent. as in the past. This would bring the foreign importation up to about 390,000 tons, and the proportion to British production to 40 per cent. Now, if these calculations were at all near the mark—and he submitted that they were fair and reasonable—the future of the British paper trade and the result to British papermakers and workers generally could not be looked upon as altogether very satisfactory. Basing their calculations upon the figures of the last census, when they found the total production of British mills was about 750,000 tons, and the number of hands employed, 30,786, at an average individual wage of £53 11s., they might reasonably estimate that the loss in wages would be £780,000, and employment given to 16,250 people abroad, who contributed neither to the Imperial nor local taxation of this country. A prominent London newspaper had just entered into a contract with foreign papermakers for a supply of "news" for five years at 1d per lb., and he asked them, as papermakers, what they might expect by putting "news" in the market at 1d. per lb., especially if they sent it out of Scotland into England. He asked them a fair question: Did they think it was right and reasonable that they, as British papermakers, should allow this thing to go on any longer? It was their bread and butter, it was the bread and butter of their wives and children, and the sooner they put a stop to it the better it would be for all of them. Now, the proposal of Mr. Chamberlain was that a 10 per cent. import duty should be placed upon all manufactured goods, which would on a paper selling at 1¼d. per lb. be equal to ⅛d., which, in his opinion, was quite sufficient to enable British manufacturers to compete successfully with the foreigner, and when compared with other countries 10 per cent. was a very moderate duty indeed, as, for instance, the average duty put on our goods into Germany was 25 per cent., Italy 27 per cent., France 30 per cent., Austria, 32 per cent., America 75 per cent., and Russia 132 per cent. They were told by the free importers that if we put a duty on manufactured goods the foreigner would retaliate by putting up the price of our raw materials, food, etc., but if Mr. Chamberlain's suggestion was carried out—that preference was given to our colonies—we could afford to look upon that threat with indifference, as we could easily meet all our requirements within our own Empire.

At a meeting at Aberdeen, Sir Howard Vincent, in the course of his speech, said: Take one industry of the many which were connected with that part of Scotland. The import of paper last year amounted to close upon £5,000,000 in value, and an absolutely free market was given to those articles. Now, the amount spent in wages upon the production of this local industry abroad amounted to no less than £1,500,000. That would mean a payment of £100 to no less than 15,000 families, or taking five to the family, some 75,000 persons in all. This year the importation of paper was even more serious, and at the end of October the amount of foreign paper brought here was no less than £4,000,000 worth, and the amount in the month of October alone was upwards of £45,000. Could they wonder, therefore, that in circumstances such as those there were considerable numbers unemployed in their midst. They might admit those articles free; they might charge no commission or duty for the labor which they displaced in the home market, but surely in return they were entitled to have equal privileges abroad to those given to foreign competitors. Did we receive these equal privileges abroad? Did we receive them as regards our production of paper? No. Wherever we sought to create a market or find an outlet for our goods, we had to pay duties ranging from 25 to 130 per cent. before they could find a market.

On the other side of the argument, Mr. Bryce addressed his constituents in Aberdeen, and speaking of the paper trade said: They could, of course, put a duty on foreign paper, and by doing so they might put so much money into the pocket of the British paper manufacturers. Whether that would go in wages to the workmen was another question altogether. There was no certainty whatever that any additional profit which went to the manufacturers would go in wages to the workmen. Neither was there any certainty that employment would be permanent, because they found in Protectionist countries that the result was often to stimulate over-production, and over-production resulted in depression, and depression was as bad in a protected country as in any other country. They might put money in the pockets of the paper manufacturers. The result of the higher price would be that they would have to pay more for the newspapers, for books, magazines, and for paper that was wanted for other purposes. It would all come out of the pockets of the consumers in the long run—there was no other way for it.

Commenting on these speeches, Paper and Pulp says: Suggesting that they (the colonies), will not reciprocate our kindly feelings except for a money consideration is to insult them, and Canada has proudly told us: "Our loyalty is not for sale." We hope no British audience will listen to the sordid argument that we must unite our colonies to us by giving them a "sop" in the shape of preferential tariffs. Almost with the same breath that Sir Howard Vincent pleads for a preference for the Canadian farmer, he mentions the fact that land to the extent of one and a half million acres has gone out of cultivation in Great Britain. Now, if we are to have colonial preferences, where does the British farmer come in? Will he not need to be protected from Canada as much as from America or Russia? Mr. Dyson is a Protectionist because he is a trade unionist forsooth! He would be protected from the "unscrupulous foreigner," as well as from the unscrupulous employer. We should like to know from Mr. Dyson, is it an unscrupulous act on the part of a Norwegian pulp shipper to sell to an English paper mill? He waxes angry because the "unscrupulous foreigner" sells four millions worth of paper to us, which our people buy because they prefer to buy in the cheapest market; while we sell to foreigners only about one and a half millions worth of paper. Mr. Dyson argues that this difference between the imports and exports is a dead loss to the workers of this country in wages alone of nearly half a million a year! Has Mr. Dyson never heard that the four millions worth of paper we bought (because we preferred it), was paid for with the products of British labor? If papermakers did not get it, other workers got it, and with their earnings they increased the purchasing capacity of our home market. This brings us to the important point so often lost sight of by those who appeal to popular audiences—that is, that our paper trade depends, and must ever depend, on the home market. Let not Sir Howard Vincent or Mr. Dyson attempt to make Aberdeen papermakers believe that this country or any country lives by profits on its exports. What we must aim at is to keep up the purchasing capacity of the home buyer.

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THE BLEACHING OF WOOD PULP.

By R. W. Sindall, F.C.S., and F. Heckford, in World's Paper Trade Review.

(Continued from last issue.)

The behavior of the pulp when brought into contact with bleach solution can be studied by papermakers to some extent without special appliances or chemicals provided they possess some fairly sensitive balance and a few measuring vessels. The following rough and ready method may be adopted with advantage in many circumstances, although the results are only approximate and cannot be accepted as correct enough for purposes of settling any disputes.

Approximate Method of Bleach Consumption.

Take 200 grammes of the pulp. Soak in a little warm water. Place in a large pickle bottle with the smallest possible quantity of water. Add a few beads and shake vigorously. Most pulps can be broken up sufficiently for a laboratory test in this way. Divide the wet mass into a number of equal parts, e.g., ten lots, so that each lot represents 20 grammes of the original air dry pulp. Some pulps will not break up easily by this method, and then the pestle and mortar must be used in order to ensure complete disintegration. Unless the pulp is thoroughly broken up, the mass bleaches unevenly and does not give uniform results.

Now to each lot placed in an ordinary basin add various quantities of clear bleach liquor from mill stock, so as to obtain a series of bleaching tests. If the mill stock of liquor stands 6 deg. Twaddell then it is sufficient to take the following data:

1 gallon of 6 deg. liquor equals ½-lb. of good bleaching powder.

1,000 cc. of 6 deg. liquor equals 50 gms. of good bleaching powder.

From this assumption it is possible to work out the several quantities of liquor required in the experiment suggested.

We give a table showing the necessary volumes for certain percentages of dry powder:

Table.

No.	Grammes of air dry pulp in mixture.	Percentage of dry bleaching powder to be added.	Actual weight of dry powder required. Gms.	Volume of bleach liquor to give the weight of powder stated. CC.
1	20.0	2.0	0.4	8.0
2	20.0	4.0	0.8	16.0
3	20.0	6.0	1.20	24.0
4	20.0	8.0	1.60	32.0
5	20.0	10.0	2.00	40.0
6	20.0	12.0	2.40	48.0
7	20.0	14.0	2.80	56.0
8	20.0	16.0	3.20	64.0
9	20.0	18.0	3.60	72.0
10	20.0	20.0	4.00	80.0

If all these mixtures are started simultaneously, it is only necessary to stir them occasionally and to note the time at which the bleach liquor in each becomes exhausted. The time of exhaustion is determined by means of starch and iodide test papers, which give a blue coloration as long as the mixture contains any available chlorine. The observer will then add another column to the above table setting out the various periods of exhaustion.

This experiment not only serves to bring out clearly the rate of consumption, but also gives information as to the amount of bleach required to produce a certain result in reference to color. For example, the color gradually improves as we pass from test No. 1 up the scale towards test No. 10. The differences in color at the same time get less until at length we get to some test which fails to give a better result, in point of color, than the one below.

In the case of a pulp which requires about 16 per cent. of dry bleach, the changes in color between tests numbered 7 and 8 will be very slight. Test number 8 may represent a maximum of color with a certain percentage of bleach, which maximum it may not be necessary to reach for the particular paper being manufactured. This is a matter for the papermaker to decide.

The results of an experiment of this kind are very instructive, and can be permanently and conveniently recorded by means of sample sheets, which can be made readily on the Temperley Syphon mould, a useful piece of apparatus for this work.

The advantage of an approximate test of the character indicated lies chiefly in its convenience and in the fact that no chemical standard solutions are necessary. The experiment can be carried out with several modifications, such as variations in temperature, variations in the proportion of air-dry pulp in the moist mixture, and so on.

In one experiment with soda pulp, broken up in the manner described, and bleached at a temperature of 40 degs. C, we obtained results as follows:

Table Showing Time of Exhaustion.

No.	Weight of Pulp	Per Cent. of Dry Bleach Added.	No. of Minutes for Exhaustion of Bleach.
1	2.0	4.0	20
2	2.0	8.0	30
3	2.0	12.0	45
4	2.0	16.0	80
5	2.0	20.0	130

In this case the pulp reached a fair color with a consumption of 16 per cent. bleach, the maximum being obtained with 20 per cent. Naturally, if the former color is sufficient for the papermaker, it is possible to effect a considerable saving in bleach and time. It is not to be supposed that with a potcher full of pulp, the soda wood will come up to a maximum color in the time given. In many cases 5 to 7 hours are required for a full bleach, and when the final color obtained by the usual percentage of powder comes somewhat lower than is desired, it is a common practice to add a little further bleach and continue the operation. Such a method does not always succeed, since the pulp is associated with a large proportion of soluble organic compounds removed by the bleach originally added, so that no improvement results. If the further addition of bleach proves to be prejudicial, it is advisable to drain off the liquor from the pulp, and allow the latter to steep in a little fresh bleach. This entails delay and additional expense which the papermaker is not favorably disposed to meet. The precise causes of the great differences in the behavior of pulp under the conditions of ordinary bleaching are not yet properly understood and appreciated.

(To be continued.)

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CALCULATING THE WEIGHT OF PAPER.

The customers of the paper makers who are familiar with the use of certain paper scales by means of which to determine the weight of a ream, are sometimes puzzled to know how to ascertain the weight under unusual conditions. That is to say, the ordinary rule of weighing a full-size sheet on these special scales, which gives directly the weight of a ream of 480, 500, or 516 sheets, as the case may be, is not always available in those cases where the sample of paper is much smaller.

With large, heavy sheets, the plan of using half or quarter sheets can be adopted to some extent, but the want of sensitiveness prevents the weighing of very small pieces. This is well shown in Table I., which gives in detail the results of a test. The experiment was made with a sheet of brown casing 36 inches by 24 inches. The full sheet was weighed, and then cut in half, and weighed a second time. The half sheet was again cut in half and the weight of the ream calculated from the reading obtained by placing the quarter sheet on the paper scales. The scales fail in sensitiveness at the third and fourth readings, when the sheet has been cut down to one-fourth and one-eighth of its original size. A result of this kind is only to be expected, for no one would weigh to ounces on a machine which is sensitive only to pounds. The paper scale used in these experiments was a Leunig scale reading up to 80 pounds per ream.

TABLE I.

Size of Sheet.	Weight of 480 Sheets by Scale Reading.	Weight of 480 Sheets (36 x 24) Calculated.
36 x 24	77.0	77.0
18 x 24	38.5	77.0
18 x 12	19.5	78.0
9 x 12	9.75	78.0
9 x 6	5.5	80.0
4½ x 6	2.5	80.0

The use of more sensitive scales and balances must then be resorted to. Special scales for the use of paper makers and agents have been devised, by means of which the weight of paper can be determined. Thus Leunig's scales for finding the weight of a ream of Demy (17½ x 22½) from a slip of paper measuring 4 square inches, are well known.

The ordinary chemical balance may be employed in these cases with advantage. When small slips of paper are the only pieces available, they can be cut to an exact size, then weighed carefully, and the result used as the basis of calculation.

In experimental work it is often a great advantage to use a hardened steel punch of a given size, capable of punching out a circular disc of a definite area. These punches are somewhat difficult to make, but once made last a long while, and prove very convenient.

A steel punch 1.13 inch diameter will give a circle of one square inch in area, while an area of two square inches will be obtained with a punch 1.59 inch diameter.

With fairly heavy papers, one disc two square inches in area will be sufficient, or two discs one square inch. With lighter papers a greater number of discs must be used. The ease and accuracy with which the discs can be prepared are sufficiently apparent.

The use of discs two square inches in area, as compared with the use of rectangular slips 4 inches by 5 inches, is given in Table II.

TABLE II.

	Rectangular Slips, 4 In. by 5 In. Wt. (Grammes)	Discs 2 Sq. In. Area. Wt. (Grammes)
Tissue	0.1945	0.0209
News	0.9054	0.0904
Writing	1.4716	0.1480
Thin manilla	0.8710	0.0899
Casings	1.6390	0.1704

The above results calculated into the equivalent weights per ream and compared with the actual scale reading obtained on the ordinary paper scales are given in Table III.

TABLE III.

Showing Weight of Ream of 480 Sheets, 20 x 30 inches.

	Reading on Paper Scales.	Wt. by Piece, 4 x 5 In.	Wt. by Discs, 2 Sq.In.
Tissue	6.8	6.2	6.6
News	28.7	28.7	28.6
Writing	45.5	47.3	46.9
Thin manilla	27.2	27.6	28.2
Casing	51.8	52.0	54.0

It may be noted that with the thin manilla and casing papers the weight, as determined from the disc pieces, varies somewhat from the reading on the paper scales. It is hardly necessary to point out that variations between a series of readings obtained from a number of small slips or discs will be greater than a similar series of readings obtained from large-sized sheets. This may be accounted for by the fact that in certain classes of paper the thickness of the sheet is not always uniform, and this deviation is much more apparent on the small pieces, whereas in the full sized sheet the thickness in one place is counterbalanced by the thinness of some other spot in the sheet.—R. W. Sindall and William Whyte, in the Paper Makers' Monthly Journal.

* * *

LITERARY NOTES.

The Forestry Quarterly, of Ithaca, N.Y., gives a very complete index of periodical literature on forestry topics, over thirty articles being summarized in the current number. It is noticeable that the great majority of these articles are from German sources. The articles deal with various phases of the subject, such as soil, botany, protection, utilization, statistics, legislation, surveying, etc. The Quarterly is to be edited now by Prof. F. Roth, of Ann Arbor, Mich. Prof. Roth who has charge of the forestry service of Michigan attended the Canadian Forestry Association's Convention last year, and made one of the most helpful addresses of the meeting.

The Canada Paper Co. have got out a novelty in the shape of a large colored picture of "Dan Patch," the champion harness horse of the world. Dan maintained his reputation for swiftness by disappearing from this office a few minutes after his counterfeit presentment was paraded on the editorial desk.

Forestry and Irrigation published monthly by the American Forestry Association, at Washington, devotes several pages of its December issue to the programme and arrangements for the American Forest Congress, with portraits of several of those prominently connected with it. Articles of value in this number are Relation of Forests to Irrigation, by Gifford Pinchot; The Relation of Forest Reserves to the Mining Industry, by F. A. Fenn; and Private Rights in Forest Reserves. Other articles deal with irrigation and reclamation projects. A report of the forest fires of November shows that sixteen States suffered from this cause during that month when the fire season is practically over. The reports are nearly all from the middle west, where drouth had made favorable conditions. No large amount of damage is reported from any particular section, however.

World Wide, of Montreal, closed its fourth volume within the past few weeks, and last month issued a special number containing, beside the regular contents, a reprint of the best cartoons of the year as they appeared in the leading journals and reviews of Europe and America. Over 150 cartoons are shown, and taken together they form an entertaining epitome of the world's history during 1904. The regular features of World Wide, which make it such a valuable compendium for the man of limited leisure, are maintaining their high standard. World Wide does not deal in details of news or trivialities of the passing show, but gives its readers the bold outline of the great movements that are at work, as reflected in the writings of the leaders of the world's thought.

The New York Times, the paper with "All the news that's fit to print," has recently moved into its new building erected at Broadway, 43rd St., Seventh Ave., and 42nd St. The building occupies a block much the shape of the site of the famous Flatiron Building, being one mile north of that structure. The new Times' building is said to be the tallest structure in New York, having a total of 31 stories, measuring from the lowest floor in the building, which is 60 feet below the street level. The new year was ushered in by the Times with fireworks from the top of the immense building, and the event was further celebrated by the publication, on New Year's Day, of a special supplement fully describing the building. This magazine, which has nearly fifty pages, fully illustrated, is a valuable record as describing the equipment of a modern newspaper plant, and is interesting to the newspaper man, the architect, and the engineer.

The Canadian Manufacturer has just celebrated the silver wedding anniversary of its foundation. Under the editorship and proprietorship of John J. Cassidey, it has been an outspoken and independent advocate of the interests of the Canadian manufacturer, especially where tariff legislation is concerned, and it must be gratifying to the publisher to realize that his old friends stand faithfully by him.

The fifth annual report (1904), of the Canadian Forestry Association makes a pamphlet of 127 pages. It contains reports of the discussions at the annual meeting in Toronto last March, with text of the papers presented, and it is also embellished with several full page engravings of forest scenes. We have elsewhere commended the important work of this Association, which holds its next convention in Quebec City on the 9th and 10th March next.

Paper and Pulp, London, Eng., has been acquired by Clayton Beadle and Dr. Henry Stevens from the present publishers, Wood Pulp, Limited. Messrs. Beadle and Stevens have for some time past been contributors of technical articles to our contemporary, and their expert knowledge should make the paper more valuable. It will be published fortnightly at 10s. a year, as before, and the offices will now be at 15 Borough, London Bridge, S.E., London.

The Canada Lumberman celebrates the 25th anniversary of its establishment by a special number, which is highly creditable to the publishers, the C. H. Mortimer Pub. Co., Toronto. It is fat with advertisements, and its literary contents comprise several instructive special articles on the development of the timber and lumber industries of Canada. There are also many engravings of men prominently identified with the lumber and forest interests of the country.

The Eastwood Wire Mfg. Co., of Belleville, N.J., have issued a calendar which has the merit of usefulness in big offices. The figures are large and plain, and each sheet has announcements of the various goods made by the company, such as screen plates, valves, wires, and various fittings for pulp and paper mills. A bird's-eye view of these works shows them to be very large.

Another large and serviceable calendar, particularly well turned out from a typographical point of view, is that issued by the Waterous Engine Works Co., Brantford, Ont., makers of modern pulp and paper mill machinery, engines of various types, sawmill machinery, etc. The top of the calendar has a well engraved view of the works. This company has branch offices in Winnipeg, Vancouver and Toronto in Canada, and St. Paul, Minn., Sydney, N.S.W., and

Santiago, Chili, are widely separated ports of the world in which they have foreign agencies.

A new trade journal, the Canadian Machine Shop, makes its appearance this month. It is in magazine form, containing about 80 pages, and the subscription is only $1 per year. "Charter subscribers," beginning with the first issue, get it at 50 cents a year. It is devoted to machine shop practice, foundry work and mechanical engineering. It is full of illustrations, and is evidently a practical paper for practical men. It is published by Biggar-Samuel, Limited, Toronto and Montreal.

* * *

ONTARIO'S PULPWOOD POLICY.

(Correspondence of The Paper Mill.)

An issue of the Provincial elections to be held in Ontario on the 25th inst., is the question of how the pulpwood reserves on the Crown lands are to be administered. On this matter the two parties are lined up, both rejecting the policy to which the Government has adhered up to the present. In other words, both the Liberals and the Conservatives are opposed to the granting of concessions of the same type as those held by the Imperial Paper Mills Company, the Spanish River Pulp and Paper Company, the Nepigon Pulp and Paper Company, the Keewatin Pulp and Paper Company, and one or two other corporations. These agreements were made by private negotiation between the Commissioner of Crown Lands and the promoters of the companies named, and were subsequently ratified by the Government's majority in the Legislature. The concessionaires make no initial payment. Their undertaking to construct power works, pulp and paper mills of a specified capacity and value, to keep a stipulated number of hands in employment, to be in full operation by a fixed date, and to pay the stated stumpage dues on their wood is all that is required to give them control of the timber in the area selected. No payment of the kind denominated "bonus" is called for.

In its convention of the 24th of November, the Liberal party declared for a modification of this method of disposal. It called on the introduction of the competitive principle subject to restrictions. Pulpwood limits, according to the new Liberal programme, must be duly advertised and sold by public auction if they lie on the southern slope of the province, and if they are practically unmixed in large measure with the pine and other merchantable timbers. Otherwise they may be disposed of in such manner as the Cabinet may deem to be in the public interest. All who know anything about the distribution of pulpwood in Ontario will perceive that this is a very slight curb upon the free rein that has been allowed to the Government in the past. It can still deal in the hole and corner method with the vast spruce tracts north of the height of land and with all pulpwood blocks south of the ridge so long as these are liberally interspersed with pine or hardwood. It is not unjust to say of this article of the Liberal platform that it is a matter of words rather than of substance, for the richest pulpwood areas are beyond the watershed, and those south of that physical feature are nearly all intermixed with pine or hardwood. In short, the Liberal application of open complication is practically nil.

Much more thorough-going is the Conservative statement of policy on this point, made in convention on the 25th of November. It calls for open competition for all timber-cutting rights the Government may see fit to dispose of. It would subject pulpwood tracts to the same kind of license regulations as those governing the acquirement and holding of pine limits. Whether lying north of the height of land or south of it, whether containing scattered lots of other timber or wooded with spruce, poplar and jackpine alone, the Conservative resolution would require the pulpwood in any given area to be bid for in open auction and to be knocked down to the party or parties offering the highest bonus.

Which policy would be the better for the province, and which the better for pulp and paper interests? This is no superficial question, and the answers to it are not self-evident. If the province can get a large money bonus in addition to the industrial developments and revenue which the present system aims at, undoubtedly the Conservative plank is, from the public standpoint, the better one. If the pulp and paper interests can secure for the bonus paid some real equivalent over and above what the private concession method affords them, the Conservative policy is also the better one of them. It is not impossible to have the plan so accommodated that the interests of both the public and the paper manufacturers might be advanced by it.

If the Government receive a substantial cash bonus it will feel bound to do one thing which its agreements with the present concessionaires do not oblige it to do. It will have to protect them in the enjoyment of their cutting rights during the twenty-one year period or other time of tenure specified in the lease. It will have to keep land clearing settlers off the tract conveyed. That will be a most important consideration for the pulp and paper industry.

Under the present agreements the pulp and paper companies are helpless against the Government. It can throw their lands open to settlement without a moment's notice, and five years after the occupation has begun the land may be producing agricultural crops instead of spruce and poplar. In that case the expensive pulp and paper mills will be left standing, a relic of the country's departed forest days. From such a fate the enterprise of pulp and paper manufacturers should be protected. While the Blanche River Pulp and Paper Company was looking for capital to go on with its building operations, settlers were over-running its limits and carving out homes thereon. Soon almost the whole tract was inhabited, and the company had to abandon its project.

Investors will be slow to put their money in concessions of the type now existing, for the reason that the main security—possession of an adequate source of pulpwood supply—is precarious. There is scarcely a doubt that the Conservative policy, calling through its dues for an initial outlay for purchase, is the better one for the pulp and paper manufacturers, as it will secure them protection from the inroads of farm-clearing, brush-burning settlers.

This matter of making permanent provision for the pulp and paper industry is one that has received too little consideration from either political party in Ontario. Both are too intent upon getting grain-growing settlers upon the new land to give due attention to the needs and possibilities of the pulpwood tracts.

* * *

Forestry and Pulpwood

The La Tuque branch of the Quebec and Lake St. John Railway will be completed, it is hoped, by December next, when a new scenic route will be open to the tourist and sportsman, and a large new timber area will be brought within marketing distance. By this branch La Tuque will be brought within 118 miles of Quebec. The St. Maurice Lumber Co., the Laurentide Pulp Co., the Belgo-Canadian Pulp Co., and various timber firms are already operating extensively in this part of the St. Maurice district, and other pulp and paper companies are likely to go in.

W. A. Mackinnon, Canadian Commercial Agent at Bristol, England, writes: There is some demand, which would doubtless be increased if successfully met, for clean white pulpwood from 4 feet to 6 feet in length and from 5½ inches upwards in diameter. One firm is willing to take 2,000 or 3,000 tons to begin with, and I should be glad to receive offers from Canadian exporters and to place them in the proper hands.

—The St. John Sun says: Probably the largest lumber operations carried on in the province are those of the Inglewood Pulp Co., in St. John, Queen's, King's and Charlotte counties. A year or two ago this company purchased from Knight Bros. large timber limits in these counties. A large portion of this property was swept by fire during the summer of 1903, and the standing timber partially destroyed. The trees were in such condition that after a few years' standing they would be of no further value. So it was decided by the Inglewood Co. that before worms and rot had a chance to get in their work it would be well to cut as much as possible of this timber. Up to the present seven million feet have been cut, but the company expect to bring out nearly twenty million feet, which will be the largest output ever taken from this district. The weather has been extremely unfavorable, and hauling, since the middle of December, has been almost out of the question, but now there is rather more snow. Only saw logs are being cut, for though the company, which is composed of Stetson, Cutler & Co., Frank Mullins, of Bangor; T. McAvity & Sons, and F. B. Knight, manager, was originally formed for the purpose of carrying on a pulp and lumbering business, the condition of the pulp market has not as yet been such as would render extensive operations in that industry advisable. It has not been decided whether or not pulpwood will be cut next season. This will depend on the state of the market.

* * *

UNITED STATES HAND-MADE PAPER.

Ninety per cent of the writing papers made in the United States are produced in Massachusetts. It is said that at Adams, Berkshire County, is the only mill in the whole world where hand-made paper is a product. The reason why paper is not made by hand is simple. A modern paper-making machine will produce a sheet of ordinary newspaper from 60 to 120 inches wide at the rate of from 150 to 400 feet a minute, or a sheet more than forty miles long in a working day of ten hours. It requires the services of five persons to make three reams of hand-made paper in a day.

There is a large demand for these hand-made papers for drawing, water-color painting, correspondence and special book editions. With the introduction of machinery for forming pulp into sheets, making by hand was practically abandoned, and the deckle-edged paper disappeared from the market, and skilled artisans, who could give the old-time shake to the mold, thereby forming a sheet of paper, passed away. In 1870 an Adams manufacturer resolved to re-establish that branch of paper-making in this country, and a representative was sent to England for appliances and help. The year following, the mill, which is the only one of its kind, was producing paper after the earlier method.

William Norman, an English paper-maker, and his wife and family, were the paper-makers secured to go to Adams. The elder Norman was a skilled hand at the mold. Only one of his sons has been able to acquire the art. The elder Norman died a few years ago, and his son William is the only man in Massachusetts who is able to turn out paper by the method of one hundred years ago.—The Paper Mill.

* * *

—The Department of Customs has advised collectors that the free entry of catalogues and price lists is to apply when they are imported for wholesale only. Duty at the rate of 15 cents per pound is to be collected on circulars, fly-sheets and other advertising matter (except catalogues and price lists for wholesale only), when imported by mail, addressed to individuals or otherwise.

* * *

The Samuel Snell Co., Holyoke, Mass., manufacturers of Snell's patent drainer stoves for paper mill drainer bottoms, are quite busy on orders, and are now running their plant night and day. One reason for this no doubt is that many paper mills that have been experimenting with substitutes for these drainers have decided that it pays best to have the genuine article.

EMERSON MFG. CO.

Jordan Plates Engines
Press Rolls
Wet Machines
Cylinder Machines
Cylinder Washers
Engine Bars
Avenues of Our Success.
EMERSON
All Work Guaranteed.
Fourdrinier Machines
Stuff Chests
Beating Bed Engines
Centrifugal Pumps
Stuff Pumps
Filling for all styles of Jordans

LAWRENCE, = = = MASS.

FAIRBANKS
'IDEAL' PISTON PACKING
Is Unequalled for Pumps and Engines.

This is Why.—The Ideal Packing consists of two wedges backed by a soft oil cushion, as may be seen in illustration. Its principal features are the construction of the wedge sections and the oil cushion. These wedges are made of a high grade fine woven cotton duck and rubber, and have interposed between their adjacent surfaces a thin strip of soft anti-friction metal, which renders the adjustment of the wedges sensitive, positive and easy, with the least possible pressure on the gland. The backing, or oil cushion is made of an asbestos core, over which is braided wire covered strands, which add considerable strength and prevents the fibres being separated when subjected to pressure. The core acts as a reservoir for the lubricant, which is a high test cylinder oil. The several parts of the packing are coated with best foliated graphite before being put together.

Largely used by Pulp and Paper Mills throughout Canada.
Send for Sample.

THE FAIRBANKS COMPANY,
MONTREAL. TORONTO. VANCOUVER. WINNIPEG.

RAG AND PAPER STOCK MARKET.

Montreal, Jan. 19th, 1905.

The scarcity of paper-making material noted in last month's report still continues, and is likely to continue till relieved by the spring collections of rags, etc. Prices, while firm, have not advanced. The short supply of water-power is reducing the capacity of paper mills, and increasing the demand for prepared wood pulp, which takes but little power to complete it into paper.

The best qualities of new cotton and linen cuttings are bringing high prices, and are mostly going to mills in the United States.

Bagging, which has hitherto been unsaleable, is meeting with some enquiry, and several sales have been made within our quotations.

Quotations are as follows:

White shirt cuttings	$0.05	to	$0.05½
Light print cuttings	3½	to	4
Unbleached cuttings	3¾	to	4¼
Corset cuttings	4	to	4½
White shoe rags	4	to	4½
Colored shoe rags	2¾	to	3¼
Blues and thirds	1.30	to	1.45
Roofing stock	50	to	60
White paper shavings	1.00	to	1.50
Mixed colored shavings	60	to	75
Common waste paper	40	to	50
Manilla rope	2	to	2¼
Old bagging	45	to	55

* * *

BRITISH PULP AND PAPER NOTES.

("Shadower" in the Paper Maker.)

It seems to me that, with raw material—and, in fact, most things used in the paper mill—up in price, our paper-makers will have to face the prospect of the increased cost of manufacturing totting up from 20s. to 30s. and even £2 per ton. That is what the advance in raw material, etc., means for the first half of 1905 at least. The Scandinavian, German, and Austrian paper-makers have found themselves face to face with

ESTABLISHED 1842.

Cheney-Bigelow Wire Works

SPRINGFIELD, MASS.

... Manufacturers of ...

FOURDRINIER WIRES

CYLINDER MOLDS, DANDY ROLLS

—ALSO—

Brass, Copper and Iron Wire Cloth

SOLE MANUFACTURERS OF THE F

Bell Patent Flat Wires for Book Papers

Bentley & Jackson,

Limited

PAPER MAKERS' ENGINEERS,

BURY, near Manchester, England.

Telegraphic Address:
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Makers of

Complete Paper Making Plants for all Classes of Paper,

High Class Fast Running News Machines,

Single Cylinder Paper Making Machines, with Cylinders up to 12 feet Diameter,

And all other Accessory Machines used in the Manufacture of Paper.

ESTIMATES ON APPLICATION.

THE PUSEY & JONES COMPANY

WILMINGTON, DELAWARE, U.S.A.

Machinery for Paper Mills and Pulp Mills

REPRESENTED BY

THE WM. HAMILTON MFG. CO., Ltd.,

PETERBOROUGH, ONTARIO,

Who are prepared to Build the Inventions
Patented by THOMAS H. SAVERY,
In Canada under Numbers 68,093, 71,746, 72,118 and 77,818; and also
The Guard-Board patented by J. H. GATELY, in CANADA
under Number 74,735.

DR. C. WURSTER'S Patented

Pulping Machines & Kneaders

NEARLY 150 AT WORK.

LARGE PATTERN — Four Sizes.

PULPING-UP 3, 6 and 9 and 12 tons of Dry Papers or Pulp in 24 hours.

POWER—5 h.p., 8 h.p., 12 h.p. and 15 h.p.

SMALLER PATTERN—For Sorted Papers only.

PULPING-UP 2 to 3 tons of Dry Paper in 24 hours. 2 to 4 h.p. Built in Iron.

For Better Quality Papers, Trough and Propellers made of Brass.

Special Machines for Unsorted Paper.

These Machines do not Grind, Cut-up, or Wet the Fibres, and as the State of Beating and Refining is Unaltered, neither Color nor Sizing being Affected, and Impurities not touched, "BROKE" can be Re-used for the Same Quality of Paper again.

FOR PARTICULARS APPLY TO

DR. C. WURSTER, 29 Abbey Road, St. John's Wood, LONDON, N. W.

ENGLAND.

the same problem, and the result has been that they raised the selling prices of their finished product. Can British paper-makers afford to give their customers the benefit of the extra cost—money out of pocket? The sooner the trade gets together, with the object of raising prices in proportion to the extra cost the manufacture of a ton of paper entails, the better.

The pulp situation is changed. Matters stand very much as they did four weeks ago. The water question is still the great trouble in Scandinavia. Most of the pulp-makers are disappointed at the manner in which our paper-makers are holding off. Scandinavian pulp-makers who have been over here recently expressed surprise that most paper-makers had asserted to them that they were fully bought for 1905. This may be in a measure true, but I happen to know that several of my paper-making friends have been badly caught and have finally had to close at the prices prevailing to-day. Another thing: I am afraid that not a few of our paper-makers who are shaking hands with themselves over the fact that they are well covered for 1905, may have a rude awakening—especially those who have closed at low prices—by some pulp-makers going back on their contracts.

I had a chat the other day with Mr. Heyman, the big Belgian rag packer, who informed me that the rag trade was feeling the benefit in the rise of wood pulp. "Buying for export has been heavy of late, and we, in common with others in our line, have had a difficulty in getting sufficient quantities to satisfy the increased demand of our customers," said he.

The Imperial Paper Mills of Canada, Sturgeon Falls, were represented at the Pulpwood Association dinner by the brothers A. B. Craig (the president) and J. Craig (one of the directors). They spoke in most glowing terms of the plant, which they stated was working full time. Mr. J. Craig informed me that he had just come back from Canada, and that the two machines were running on good contracts for both the

---

JAMES KENYON & SON,

Telegraphic Address "KENYON-BURY" DERBY STREET MILLS Telegraphic Address "KENYON-BURY

BURY, - LANCASHIRE

Manufacturers of FELTS For Paper Makers.

Couch Roll Covers, Wet and Dry Felts of all kinds, including

Patent Cotton Dry Felts

F

Special attention paid to felts for fast running news machines

PRESSES, HYDRAULIC or KNUCKLE JOINT.

Heavy Duty Pulp and Baling Presses.

WILLIAM R. PERRIN & COMPANY, Limited,
TORONTO, Canada.

Canadian and the American markets. He said it was the intention of the company to put down two more paper machines. I suggested that the company should give our British engineers a

STUFF PUMP.

This pump is made in three sizes, 5", 6" and 8".

The valves are made so as to be easily and cheaply replaced and can be got at without using wrench.

We also make boiler feed and other pumps.

Particulars and references on request.

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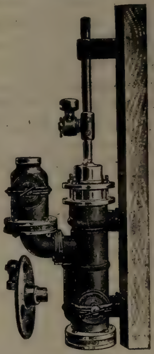

T. McOUAT & SON, Lachute, Que.,

O. REICH & CO., WOOD PULP AGENTS,
28 Budge Row, London, E.C.
56 Royal Exchange, Manchester, England

Wallace—Jaastad—Drewsen
ASSOCIATED INDUSTRIAL ENGINEERS AND CHEMISTS
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Pulp and Paper Mills, Power Developments, Reports, Consultation.
OFFICES AND LABORATORIES—Temple Court Bldg., New York.

BRUNNER MOND & CO., Limited
NORTHWICH, ENG.
LARGEST ALKALI MANUFACTURERS IN THE WORLD.
Soda Ash 58 per cent.
Bleaching Powder 35-38 per cent.
SOLE AGENTS IN CANADA
Winn & Holland, = = Montreal

chance to quote for them. Mr. Craig said that he had got the idea that the Americans had more experience in turning out fast-running "news" machines. On reflection, however, he came to the conclusion that the suggestion was a good one, and that no harm could be done by getting our people to quote. I pointed out that there are paper machines running in this country just as fast and, perhaps, more efficiently turning out a better web than many of the so-called "greyhounds" running in America.

* * *

COMPANY CONVENTION.

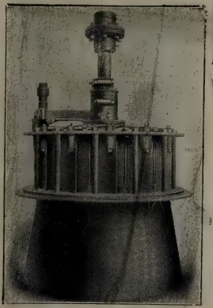
A unique Canadian convention was held from January 2nd to 9th by the Canadian Rubber Company at their executive offices in Montreal. This was a gathering of all the company's branch managers throughout the Dominion for the purpose of discussing mutual interests, and undergoing a course of instruction at the hands of the company's manufacturing experts. Stenographic reports were prepared giving each day's proceedings and every participant in the discussion received a copy. One of the company's officials from the Pacific Coast travelled over 5,000 miles to be present, and many of the other "pilgrims" cheerfully overcame similar distance obstacles.

The convention was originated by D. Lorne McGibbon, the forceful general manager of the Canadian Rubber Co., and was a marked success in every way. At the conclusion of the convention, all who participated were royally entertained by Mr. McGibbon at a dinner and theatre party.

* * *

H. G. Campion, of 23 Old Broad-street, London, Eng., a creditor and shareholder of the Sturgeon Falls Pulp Co., predecessors of the Imperial Paper Mills Co., has petitioned for the winding up of the old company. The petition was to be heard on the 17th inst.

The Samson Turbine



We have supplied many of our Samson turbine water wheels to pulp mills for direct connection to grinders, for driving beaters, and, in fact, for all power purposes.

The Samson has an even and regular speed under all changes of load, ensuring better and more even quality of pulp and an even output from the paper machines.

Of course the work placed on a water wheel when used for this purpose is very trying, but the Samson has never yet failed, under even harder conditions.

It also costs less per horse power than any other turbine.

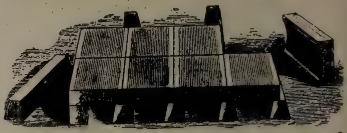
Address Department
C for Catalogue.

THE
Wm. Hamilton Mfg. Co.
PETERBOROUGH, ONT.

A suit has been commenced in St. John, N.B., that will likely bring about a sale of the Cushing Sulphite Pulp Mill. Earle, Belyea & Campbell, as solicitors for the Eastern Trust Company, which represents the bondholders, have brought suit to foreclose the mortgage on the mill. On June 25th, 1901, there was an issue of $280,000 of bonds bearing interest at 10 per cent. Most of these were taken up in England, and it is understood that Capt. Partington himself, holds a considerable amount of the bonds, and will therefore be interested in the new move. Some of the bonds

THE
DAVIDSON FAN
MECHANICAL HEATING, VENTILATING AND DRYING, MECHANICAL DRAFT FANS
MASSACHUSETTS FAN COMPANY, WALTHAM, MASS.
208

Drainer Stones



Save your stock and temper by using the Klary & Snell Patent Drainer Stones. They are the only drainers that give satisfaction.

Send for Sample and Price List.

SAMUEL SNELL CO., Holyoke, Mass.

REASONS WHY THE CANADIAN OLIVER TYPEWRITER IS SUPERIOR TO ALL OTHERS.

VISIBLE WRITING.—The writing is visible, each letter being in plain sight the instant it is made.
DOUBLE TYPE BAR.—It has a double or U shaped Type Bar provided with a shaft bearing as broad as the bar is long, thus insuring Permanent Alignment without guides.
SPEED.—Its visible writing, rapid escapement, direct type bar connection, downward stroke, and light touch, makes it the most speedy of all writing machines.
TYPE, FACE UPWARD FOR CLEANING.—The type are of steel and lie face upward so that they can be cleaned with one sweep of the ordinary type brush.
PRICE.—$30.00 cheaper than imported machines of like standard; because MADE IN CANADA.

WHY PAY DUTY?

CANADIAN OLIVER TYPEWRITER CO., MONTREAL,
MANUFACTURERS.

BRANCH :—
55 VICTORIA ST., TORONTO.

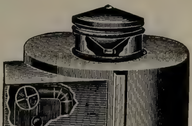
BARKER,
CHIPPER,
PAPER-CUTTER

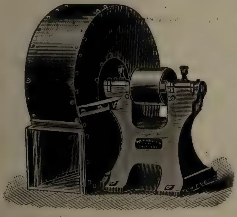
MACHINE KNIVES
Of Every Description.

The Peter Hay Knife Co., Limited, Galt, Ont.

are held in St. John. The interest on these bonds has not been paid, and now amounts to $98,000, so the present suit is for the principal and interest, $378,000 in all. Hanington, Teed & Hanington represent the pulp company. It is not known, says the St. John Sun, when the case will come to trial; in fact, only the summons has as yet been served. The probable outcome of the suit will be an order of the court for the foreclosure of the mortgage, and the sale of the mill to satisfy the debt. This will wipe out the interest of local shareholders in the property, and will give the purchasers, whoever they may be, absolute possession.

"H. J. Crows, vice-president, and B. F. Pearson, secretary of the Timber Estates Co., who had been for the past week occupied in the negotiations anent the project known as the Harmsworth deal, have left for Canada. On Saturday there was registered at the Colonial Secretary's Office, the 'Anglo Newfoundland Development Company, with the following officers:—M. M. Beeton, president; Sir A. Harmsworth, Bart., director; L. Harmsworth, M.P., director; H. Harmsworth, director. This company is capitalized at five million dollars, and is formed to engage in lumbering, pulp-making and paper-making in this colony. We understand that it has reached an agreement with the Timber Estates Co. as vendors of the Millertown and adjacent timber areas, and with the government of this colony in respect to certain legislative provisions, which agreement now only awaits the signature of His Excellency the Governor." The above is from the St. John's, Newfoundland, Herald of 9th inst. Other reports from St. John's state that the new company undertakes to expend $250,000 in the next four years, and expect to put up a plant to cost $3,000,000. The price paid for the Timber Estates property is said to be $550,000. Other timber areas may be acquired by the new company.





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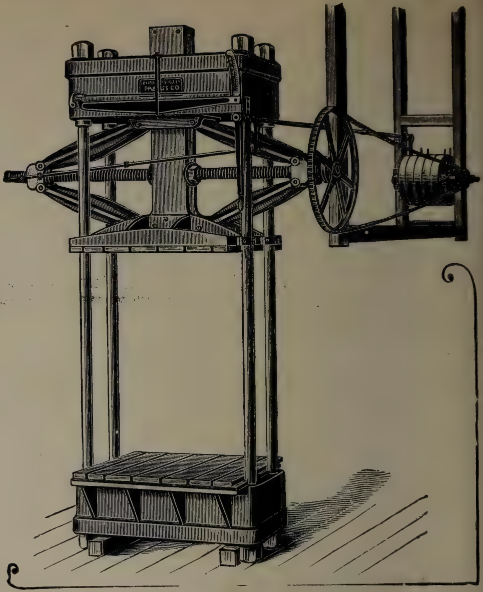

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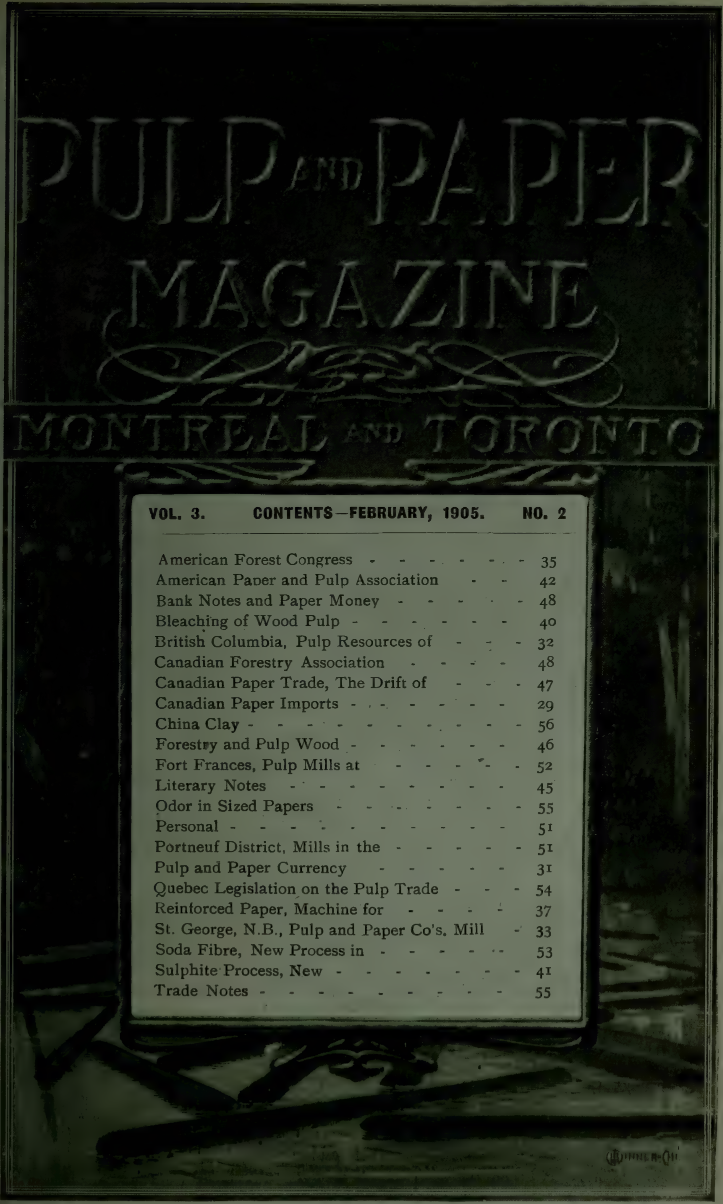

PULP AND PAPER MAGAZINE

MONTREAL AND TORONTO

VOL. 3. CONTENTS—FEBRUARY, 1905. NO. 2

American Forest Congress - - - - - - - 35
American Paper and Pulp Association - - 42
Bank Notes and Paper Money - - - - - 48
Bleaching of Wood Pulp - - - - - - - 40
British Columbia, Pulp Resources of - - - 32
Canadian Forestry Association - - - - 48
Canadian Paper Trade, The Drift of - - - 47
Canadian Paper Imports - - - - - - 29
China Clay - - - - - - - - - - - 56
Forestry and Pulp Wood - - - - - - 46
Fort Frances, Pulp Mills at - - - - - 52
Literary Notes - - - - - - - - - 45
Odor in Sized Papers - - - - - - - 55
Personal - - - - - - - - - - - 51
Portneuf District, Mills in the - - - - - 51
Pulp and Paper Currency - - - - - - 31
Quebec Legislation on the Pulp Trade - - - 54
Reinforced Paper, Machine for - - - - 37
St. George, N.B., Pulp and Paper Co's. Mill - 33
Soda Fibre, New Process in - - - - - 53
Sulphite Process, New - - - - - - - 41
Trade Notes - - - - - - - - - 55

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INDEX TO ADVERTISEMENTS.

Beloit Iron Works	21
Benson & Co., W. T.	10
Bentley & Jackson	4
Bertram's, Limited	6
Black-Clawson Co	7
Bowater & Sons, W. V.	24
Bredt & Co., F.	10
Brunner, Mond & Co., Limited	18
Canada Paper Co	23
Canadian Rubber Co.	8
Carrier, Laine & Co.	8
Castle, Gottheil & Overton	9
Cheney-Bigelow Wire Works	14
Christie, J	24
Christie, Limited, George	3
Cousland & Co., A.	10
Eastwood Wire Mfg. Co	2
Emerson Mfg. Co	13
Fairbanks Co., The	13
Freese, Jean	3
Hamilton Mfg. Co., Wm	15
Hardy, George F.	9
Hawksworth, Alfred	12
Hay Knife Co., Peter	17
Hough, R.	24
Huyck & Sons, F. C	5
International Pulp Co.	9
Jenckes Machine Co	12
Johnson & Sons, Limited, C. H	6
Kenyon & Son, James	17
Klipstein & Co., A.	11
Kimball, Herbert S.	9
Knight & Co., John	19
Little & Walker	9
McOuat & Son, T.	18
Paton, Thomas L	3
Porritt & Sons, Joseph	10
Porritt & Sons, Limited, Samuel	24
Porritt Bror. & Austin	6
Perrin & Co., Ltd., Wm. R	18
Pringle & Son, T.	9
Pusey & Jones Co	16
Quebec & Lake St. John Ry.	9
Reich & Co., O.	18
Seymour & Guest	9
Sheldon & Sheldon	19
Smith Co., S. Morgan	23
Snell, Samuel	15
Sullivan & Co., C. F.	10
Union Screen Plate Co	3
Vogel, C. H	9
Wallace-Jaastad-Drewson	18
Wertheim & Co., A.	20
Waterous Engine Works Co., Ltd	22
Whittaker, Richard	11
Wilson, Paterson & Co.	12
Winn & Holland	18
Wurster, Dr. C.	16
Young, J. S.	23

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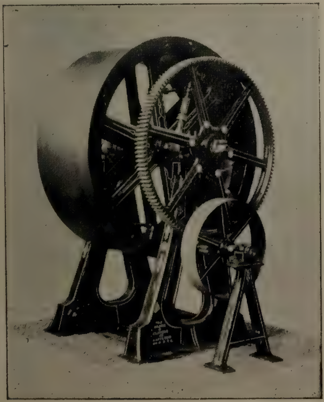

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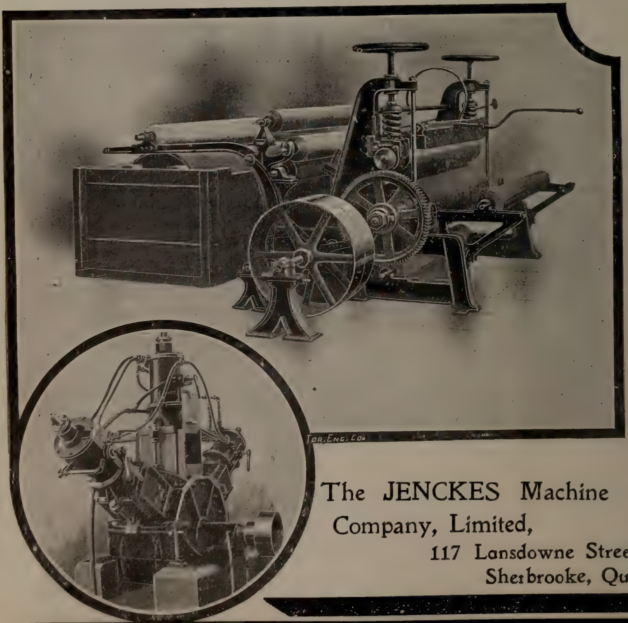

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OF CANADA

VOL. 3.—NO. 2. TORONTO, FEBRUARY, 1905. {$1 A YEAR. SINGLE COPY 10c.

Pulp and Paper Magazine

A monthly magazine devoted to the interests of Canadian pulp and paper manufacturers and the paper trade issued between the 15th and 20th of each month.

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THE DRIFT OF THE PAPER TRADE.

The figures we present in the appended table, showing the drift of Canadian imports of paper in the last twenty years, should be studied by those concerned with the paper trade of this country. The totals given at the end of the table show two things, first, that in the last twenty years the imports of paper manufactures into Canada from Great Britain have only advanced about five per cent., while our imports from the United States have doubled; second, that making due allowance for the growth of home manufactures, Canadian paper makers have, like their British brethren, left undeveloped some good lines of manufacturing which could be done here at home.

Had it not been for the stimulus given by the preferential tariff, the showing of the Old Country in the Canadian paper trade would be even worse than it is. The history of imports in each line cannot be traced in the official returns, owing to several changes in the classification of imports, but where the record is continuous it will be seen that United States manufacturers have in almost every case outstripped their British cousins in this market, and have occupied ground which one would think could have been profitably cultivated by Canadian mills. This last point is forcibly brought out by our correspondent, "Pate de Bois," who argues the question from the raw material standpoint, taking the United States returns. Our correspondent, who is exceptionally well informed, confirms what has been stated more than once in this magazine—that the returns of the shipments of pulpwood to the States are so far understated in both American and Canadian official records, as to be utterly misleading to the general public. Men engaged in the business in Quebec estimate that 600,000 cords of wood go out of that province alone every year to the United States, that which is rafted on the St. Lawrence being loosely recorded, and much that is sent by rail being classified otherwise than as pulp-wood. Of pulp alone the United States official returns show that 70,048 tons, valued at

$1,695,073 were imported from Canada in 1902, 95,080 tons valued at $1,833,586 in 1903, and 119,238 tons valued at $2,312,764 in 1904, Canada being the chief source of United States supplies in pulp.

Taking pulp and pulp-wood together, it is estimated that about one-third of the material for United States paper mills is derived from Canada. One authority places it at one-half. Whatever the actual amount, it is certain that if this raw material were made up into paper in this country, instead of being shipped out of the country as wood or pulp and re-imported as paper, it would give employment to a large number of hands, and a vast amount of capital.

Taking the modest figures of the shipment of pulp-wood from the province of Quebec alone, and assuming the wood to be made up into the cheaper form of mechanical pulp, and that none were made into sulphite pulp, we would have, on the basis of $4,000 per ton per day of grinding capacity, an equipment in mills worth $8,000,000. The same capacity in sulphite pulp would increase the cost in equipment as 7 is to 4. If this amount of wood were turned into paper, a rough idea of the investment required can be gained from the fact that a paper mill favorably situated for water power and producing 100 tons of paper per day, made in the proportion of 70 tons of ground wood to 30 tons of sulphite would cost about $1,310,000, exclusive of the dam for power. It will thus be seen that if the pulp-wood now going out of Quebec were turned into pulp and paper within the province, it would give employment to millions of capital and to thousands of hands, and that it and the allied industries dependent on it would afford a home market for the Quebec farmer, compared with which the paltry proceeds from the sale of pulp timber would be as one cent compared to one dollar.

In the appended table the imports from countries, other than the four named, are not specified, but their aggregate is included in the totals put down under each heading.

GROWTH OF CANADIAN PAPER IMPORTS IN TWENTY YEARS.

	1884.	1894.	1904.
BAGS, PRINTED OR NOT:—			
Gt. Britain ...	79	......	368
U.S.	3,138	466	45,151
Germany	......	......	2,286
France	......	......	......
Total	3,127	466	47,843
CARDS FOR PLAYING:—			
Gt. Britain	2,862	547	16,219
U.S.	5,682	13,482	49,129
Germany	146	116	......
France	59	......	......
Total	8,749	14,145	65,886
CALENDERED PAPER, WRITING AND NOTE:—			
Gt. Britain	155,722	98,782	......
U.S.	97,906	47,151	......
Germany	11	1,367	......
France	1,371	402	......
Total	255,121	147,886	......
HANGINGS OR WALL PAPER:—			
Gt. Britain	71,592	6,863	11,221
U.S.	186,683	136,932	173,332
Germany	4,040	162	2,053
France	1,571	142	660
Total	264,976	67,152	188,330
LEATHER BOARD:—			
Gt. Britain	......	......	32
U.S.	4,571	7,938	23,604
Total	4,571	7,938	23,636
STRAW BOARD:—			
Gt. Britain	......	2,609	637
U.S.	......	13,261	110,646

	1884.	1894.	1904.
Germany	......	295	......
France	......	......	......
Total	......	16,675	112,547

MILL BOARD:—

Gt. Britain	2,725	1,133	......
U.S.	7,144	8,325	......
Total	9,869	10,027	......

CARD-BOARD, BRISTOL-BOARD, ETC:—

Gt. Britain ...	......	1,997	5,675
U.S.	......	13,510	52,669
Germany	......	5,690	1,662
France	......	22	4
Total	......	21,219	60,300

UNION COLLAR CLOTH PAPER IN SHEETS NOT SHAPEN:—

Gt. Britain ...	500	......	......
U.S.	25,597	6,190	......
Total	26,097	6,190	......

ENVELOPES, PAPIER MACHE, ETC.:—

Gt. Britain	72,483	93,021	15,797
U.S.	163,206	246,245	49,702
Germany	34,888	33,466	1,076
France	9,081	7,970	267
Total	283,861	387,013	67,008

PRINTING PAPER:—

	1884.	1894.	1904.
Gt. Britain	17,051	24,179	143,264
U.S.	15,084	33,583	289,993
Germany	......	1,109	1,962
France	......	......	1,005
Total	32,135	58,871	435,693

RULED PAPER:—

Gt. Britain	8,996	2,914	33,663
U.S.	23,271	1,939	93,309
Germany	39	......	4,432
France	765	127	703
Total	33,071	4,980	154,707

WRAPPING PAPER:—

Gt. Britain ...	3,689	680	3,225
U.S.	8,373	7,647	34,219
Germany	......	......	3,597
France	......	26	9
Total	12,208	8,394	47,813

ALL OTHER KINDS OF PAPER:—

Gt. Britain	26,349	71,486	148,325
U.S.	114,600	104,804	408,822
Germany	1,238	2,795	10,929
France	1,155	1,718	6,545
Total	143,342	180,803	611,766

TOTAL IMPORTS FROM:—

Gt. Britain ...	362,048	304,211	383,426
U.S.	659,255	741,482	1,360,576
Germany	40,372	45,002	25,711
France	14,802	14,407	9,193

Pulp and Paper Currency.

A special tariff, devised as a war measure, comes into force in Japan on the 1st July next. The duties on a number of articles will be largely increased, but fortunately both pulp and lumber will escape this tax.

At a recent meeting in London, Eng., of Flax Pulp, Limited, the president, Harold Krall, gave a history of the developments in the United States, England, and in France and Germany. This company has a plant at Runcorn, Eng., and one at Niagara Falls, where paper and other products are made from flax straw. For the latter plant the flax is gathered in Dakota and brought to the Falls for treatment. A representative of the Pulp and Paper Magazine on a recent visit to the Falls was unable to learn anything definite, and from the statements of the president it may be inferred that the work up to the present has been chiefly experimental, or that at all events flax paper is not yet produced on a commercial scale there. Mr. Krall says, however, that his company is now able to contract for ample raw material, and has been successful in obtaining new products from the wastes. He points out that the field of cellulose is very little appreciated in England at present, whereas in France and Germany considerable attention has been given to the production of artificial silks, threads, etc. In addition to the preparation and sale of flax pulp, the company intends to cover a much larger field. If these experiments prove successful there should be a large field in Manitoba for the production of pulp or paper, or both, from flax. Flax is grown in Manitoba and the North-West almost exclusively for the seed, and thousands of tons of the straw are burnt up each season. Proposals are made from time to time to use this fibre for the manufacture of linen, but the practical difficulty in the way is that when flax is sown for seed, it is sown sparsely, so that it will branch out and give the greatest yield, and thus the fibre is short and unfit for linen fabrics that would compete with imported goods. But the short fibre would be no drawback in using it for paper, and the chief problem to be solved would be a cheap process of converting it into pulp. Up to the present, the cost of manipulating would be too expensive in the Canadian West, but the manufacturing era is beginning to dawn in Winnipeg and other western centres, and it may not be long before real linen paper made in Canada can be given to the world in competition with the rag papers of other countries.

The making of yarn and cloth from paper appears to have developed rapidly, according to the statement of J. Marx & Co., of London, Eng., who say that coarse numbers of paper yarn are now being produced to 1½d. per lb. (3 cents), and medium to fine numbers at 2d. to 3d. This yarn is spun from wood pulp fibre and is used for weaving into bags for cement, sugar, etc., and for table cloths and trouserings and even for coatings. The firm offer to show samples at their offices in Finsbury Pavement, and they give currency to a report that the Emperor William intends to have a pair of trousers made from paper cloth to test its wearing qualities, and give encouragement to an industry which was first practically developed in Germany. It is stated that a pair of paper cloth trousers can be made —in Germany—for 25 cents. With garments at this price and the Emperor William setting the fashion, who would not wear pants?

The Ashburton Treaty between the United States and Canada forbids any obstructions to the St. John River where it forms the boundary line between New Brunswick and Maine. Last year an attempt was made by a Maine company to dam the river at Winding Ledges, and the attempt having failed, the same parties are trying to attain their object by building a series of piers out into the river to hold their timber. The New Brunswick lumbermen are making a protest through the Provincial Government.

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PULP RESOURCES OF BRITISH COLUMBIA

Wm. Shannon contributes to the Winnipeg Commercial an estimate of the pulp prospects of British Columbia.

Mr. Shannon says that the Dominion of Canada has been proved by experts to have the largest supply of pulp timber of any country in the world, and no part of the world is so favorably situated for the manufacture of pulp and paper as British Columbia.

He sums up the advantages of the province as follows: The climate of the coast is moist and without frost; this is a very essential point in the manufacture of pulp, thus allowing the mills to run the whole year around. There is no part of the world that has such great water power available as our coast, which also has hundreds of miles of inland waters, which the largest vessels afloat can safely navigate. Our timber is superior to that found in any other part of the Dominion.

The Douglas fir—the great lumber timber—disappears as we go north to Queen Charlotte Sound, and the spruce—one of the best pulp timbers—takes its place. As pulp timber we have spruce and a timber which is similar to spruce, commonly called larch; also white fir and hemlock, and in the interior there is cotton wood and poplar, which makes the cheaper kind of pulp. Although the coast is rough and broken a great deal by mountains, still the timber can be taken out cheaply.

Looking over the estimates of experts as to the number of cords of pulp timber per acre in Ontario, it is found that the average is about thirteen. A conservative estimate on our coast would place the average at thirty-three cords of pulp timber to the acre. The British Columbia timber is softer than the Ontario, and therefore more easily worked.

Taking the hundreds of miles of the British Columbia coast, which is mostly covered with a good growth of timber, the enormous quantity of pulp timber available can be imagined.

China and Japan must be looked to as the markets for the British Columbia pulp, as there is not suitable timber in those countries for pulp. The Orient will no doubt in time import all its pulp from the coast, and with its cheap labor manufacture the paper itself. A few years ago the paper mill at Sault Ste. Marie, Ont., shipped 500 tons of pulp per month to Japan, and this amount has been increasing every year.

There is no pulp-wood in Australia, and already there is a large quantity of pulp and paper being shipped from British Columbia to those ports each month.

Pulp Mill of St. George, N.B., Pulp and Paper Co., Described in Issue of March, 1904.

Mill Matters.

The new chemical fibre mill of the Canada Paper Co., at Windsor Mills, Que., has a capacity of ten tons per day. The "cooks" turned out since it started are highly satisfactory.

The appeal of the Cushing Sulphite Pulp Co. has been heard this month before the Provincial Court of Appeal at Fredericton, N.B. It is twenty years since argument of such length has been heard in this court. Judgment was reserved.

The petition presented by H. G. Campion for the winding up of the Sturgeon Falls Pulp Co., in London, Eng., last month was dismissed by the judge. The company had sold out to the Imperial Paper Mill Co. and had gone into voluntary liquidation.

The Miramichi Pulp and Paper Company, at Chatham, N.B., have started their barking mill. More than one hundred men are employed and this number will be increased when the mills are running. A wood train is out collecting 40,000 cords of pulp-wood, and it is expected that the pulp mill will be in operation this month.

The Pacific Coast Power Company and the Industrial Power and Pulp Company, of Vancouver, have amalgamated. Both companies secured a reserve from the Government of 80,000 acres, so that their holdings will be 160,000 acres. Their holdings lie between Knight's Inlet and Jervis Inlet, some on Vancouver Island, along Bear River to Alert Bay. The English president and several directors are expected out in the spring to start work. It is stated that $1,000,000 will be invested in plant, and 800 to 1,000 men employed. The original promoters were mostly Victoria men.

The rumor current a few days ago that the Sault Ste. Marie industries were again in financial difficulties proves, fortunately, to be without foundation, so far as the Canadian establishments are concerned. The rumor started out of the questions relating to the financing of the extensive repairs required to the dam and works on the United States side. It appears that about $1,500,000 will be required to put the United States works in proper shape. The sulphite mill at the Canadian Sault is not yet running, having now been idle for about eighteen months, but the ground wood mill is in operation, and markets all its products in the Western States.

The Imperial Paper Mills of Sturgeon Falls, Ont., of which John Craig is managing director, and Thomas McCormick, late of the Union Bag and Paper Co. of the United States, superintendent, are now turning out 280 tons of news paper per week. On a recent day 57 tons were made within the 24 hours. The output of these mills is being shipped to the United States, Great Britain, Australia, and New Zealand.

A report was in circulation last month to the effect that Edward Lloyd, Limited, the large firm of paper makers and export stationers of London, Eng., were about to follow in the steps of the Harmsworths, and erect pulp or paper mills in Canada or Newfoundland. Regarding this rumor the firm write us: "We have no intention of erecting pulp or paper mills in Canada."

On the 23rd ult. judgment was given at Osgoode Hall, Toronto, in the appeal of the Toronto Paper Mfg. Co. in the case in which a jury awarded $8,000 to a workman named Glasgow, who was injured while operating a paper cutting machine in the company's mill, at Cornwall. It was held by the judge of the Appeal Court that the case was one which could not be withdrawn from the jury; there was evidence of a defect, and one which caused the injury. But there was no liability at common law, and under the Workmen's Compensation Act the damages are limited to $1,500. Some evidence was improperly rejected, but the rejection caused no substantial damage. Appeal allowed to the extent of reducing the damages to $1,500.

* * *

The Ottawa Lumber Company has purchased from J. P. Logue & Company a timber limit comprising thirty sq. miles on the Ottawa river, above Lake Temiskaming. These limits have never been cut into.

The American Forest Congress.

Reference was made in last issue to the forestry convention in Washington in January. Another correspondent sends us the following sketch of the striking features of the congress:—

The Forest Congress held at Washington, 2nd to 6th January, is one of the most important steps in the history of the forestry movement in the United States in recent years, and its significance is well summed up in the following paragraph from the address of the President of the United States to the assembled delegates.

"The great significance of this congress comes from the fact that henceforth the movement for the conservative use of the forest is to come mainly from within not from without; from the men who are actively interested in the use of the forest in one way or another even more than from those whose interest is philanthropic and general. The difference means to a large extent the difference between mere agitation and actual execution, between the hope of accomplishment and the thing done. We believe that at last forces have been set in motion which will convert the once distant prospect of the conservation of the forest by wise use into the practical accomplishment of that great end; and of this most hopeful and significant fact the coming together of this congress is the sufficient proof."

A glance at the programme makes clear the bearing of the President's statement above quoted. After the preliminary business of the first morning's session was disposed of the Congress took up the consideration of the Importance of the Public Forest Lands to Irrigation. In the Western States, as in part of Western Canada, there are large tracts of land that depend for their agricultural possibilities on a supply of water for irrigation, and the sources of supply in the Sierras and the Rocky Mountains are largely controlled and regulated by the forests growing upon them. This intimate relation is felt by the people of the West, and the subject was introduced by the Secretary of the National Irrigation Association, who voiced an urgent demand that the wholesale destruction of timbered watersheds should be prevented, and that action should be taken to reforest lands where the value of the water supply would warrant such a step. Another question of interest to the West was grazing in relation to the forest reserves, which was dealt with by representatives of the Stock Associations.

The Lumber Industry and the Forest, the next subject brought before the convention, was given over into the hands of the lumbermen and the lumber associations. Three lumber companies were represented by their presidents, or vice-presidents in the list of papers presented, and as many of the Lumber Manufacturers' Associations were also heard. This session was presided over by N. W. McLeod, President of the National Lumber Manufacturers' Association. From all came a strong declaration of the interest of the lumberman in forestry, and at the same time a statement that this had not always been their attitude. The change has been due to two causes specially. First, to a clearer understanding by the advocates of forestry methods of the elements, and especially the economic element, involved in forest management and consequently a more sympathetic attitude toward the lumberman. And, second, the increased value of forest products and timber stumpage, impressing upon the lumberman that all the value of his timber holding does not rest in the present but that it is to his advantage to take measures to preserve and perpetuate the forest. The lumbermen are therefore desirous of obtaining all possible information which will assist them in attaining this end and are prepared to receive light from foresters or from any other source. The supply of hardwoods for manufacturing purposes is also giving the manufacturing establishments some concern, and they too add their voice in urging consideration of the future resources.

The railway companies had the floor for half a day under the chairmanship of Howard Elliott, President of the Northern Pacific Railway Company, and three of the papers were by representatives of other railway companies. The railways use large quantities of timber in connection with the equipment of their lines, their total annual consumption for the United States being probably three billion feet; which would mean the denuding of about one million acres, or the annual product of fifty million acres. Ninety million ties are required annually. The railways see the sources of supply steadily diminishing while the price and their requirements are as steadily increasing. They therefore ask the question: How can the demand be met? The Pennsylvania Railroad had made an attempt to answer it by planting trees along their right of way and other lands held by them. The situation may also be helped by preservative treatment to increase the life of the timbers used. This may mean a doubling or quadrupling of the period of use of a tie while the addition to the cost is small. A red oak tie lasting five years and costing forty cents may be treated at a cost of sixteen cents so as to double its life and make it equal to a white oak tie costing, untreated, eighty-five cents. Experimental work in this line is being done by the Bureau of Forestry.

In addition the Relation of Forestry to Mining was considered, and thus the practical and business aspects of forestry and its relation to other great industries were discussed and emphasized by the representatives of these industries. It was a significant fact of the Congress that leading men in railway organization, in lumbering and manufacturing enterprises were prepared to come to such a meeting and give time and thought to the consideration of the forest supply, and showed more clearly than anything else could do the demand and the reason for the movement which the Congress represented.

The meeting held in the National Theatre, which was presided over by Hon. Jas. Wilson, Secretary of Agriculture, who is also President of the American Forestry Association, was an effort to reach a wider constituency than could be influenced by the regular meetings of the Forest Congress. An address by President Roosevelt was sufficient to attract an audience that filled the theatre. The President is not an orator, and could hardly be described as even eloquent, but he is a clear, forcible speaker, evidently earnestly seized with the importance of the question with which he is for the moment dealing, and desirous of driving its truth home to the minds of his hearers.

"The producers, the manufacturers, and the great common carriers of the nation had long failed to realize their true and vital relation to the great forests of the United States, and forests and industries both suffered from that failure. But the time of indifference and misunderstanding has gone by."

"No man is a true lover of his country whose confidence in its progress and greatness is limited to the period of his own life, and we cannot afford for one instant to forget that our country is only at the beginning of its growth. Unless the forests of the United States can be made ready to meet the vast demands which this growth will inevitably bring, commercial disaster is inevitable."

"If the present rate of forest destruction is allowed to continue, a timber famine is obviously inevitable. Fire, wasteful and destructive forms of lumbering and legitimate use are together destroying our forest resources far more rapidly than they are being replaced."

Such were some of the statements in which the President expressed his views of the situation. But the anomaly, at least to those used to a British form of government, is that, no matter how strongly the executive may consider a certain course advisable, it does not necessarily follow that that will have any effect on legislation, and in fact there are many defects in the organization of the forest service and in the forest laws in regard to which the Government is helpless until Congress is prepared to act.

Canada was well represented at the Congress, those present being Dr. Robt. Bell, Professor John Macoun, Dr. Jas. Fletcher, E. Stewart, Norman M. Ross, and R. H. Campbell, Ottawa; Aubrey White, Dr. Judson F. Clark, Dr. A. T. Drummond, J. H. Faull, Toronto; G. Y. Chown, Kingston. Mr. White addressed the Congress at the opening session, giving greetings from Canada and explaining the methods of timber administration in Canada. Mr. Stewart also spoke of the forestry work in the West and invited the members of the Congress to attend the meeting of the Canadian Forestry Association to be held in Quebec, 9th and 10th March, 1905.

Machine For Reinforced Paper.

Robert Binns, of South Windham, Conn., has been granted a United States patent on a paper-making machine for making a reinforced paper. It is described as follows in the Paper Trade Journal:

In the accompanying drawings, Fig. 1 is a side elevation of a paper-making machine constructed to embody the invention. Fig. 2 is a plan view thereof. Fig. 3 is a side elevation of a part of the machine with the side broken away to show the water levels within the same. Fig. 4 is a relatively enlarged plan view, partly in section, of the water discharge pipe. Fig. 5 is a relatively enlarged front elevation of one of the cylinders detached, portions being broken away to illustrate details of construction. Fig. 6 is a sectional view of the surface of the cylinder shown in Fig. 5, slightly modified. Fig. 7 is a vertical section of a cylinder of modified form.

The apparatus in many respects corresponds to the ordinary cylinder paper-making machine—comprising a long tank which may be partitioned off to form separate cylinder chambers, in each of which beaten pulp is introduced by water after the usual manner. The water in each section is maintained at a suitable level, usually near the top of the tank. 2 2 are partitions. 3 3 represent current breakers. 4 4 are hollow screened cylinders revolubly mounted in a tank 1.

The pulp is deposited in web form on the screened surface of the cylinders 4 4 after the usual manner. 5 is an endless apron, of felt or other suitable material, which traverses the several cylinders and over suitable rollers, usually including a tension roll 6 and pressure rolls 7 7. The rollers 7 7 press the apron 5 into contact with the screened surface of the cylinders 4 4, so that the pulp will be taken up by the apron and conveyed along to the next cylinder, where another layer of pulp is deposited on the first layer, and so on. The web thus formed is finally discharged at 8.

The features of this machine are novel means for mounting the cylinders for maintaining the desired water level therein. The screened portions of the cylinders are suitable for making a web which may be of uniform thickness or increased thickness at certain predetermined points.

The paper-making cylinder 4 is hollow and is provided with closed ends 41 41. 42 is the hub. 9 is a hollow shaft upon which the hub of the cylinder rotates. 43 43 are passages through the hub 42, arranged to register with passes 91, which tap into the hollow shaft 9. If desired the bore of the hub 42 may be cored out adjacent to these passages

91 in the shaft 9, so that the outflow of water will be continuous when the machine is in operation. The face of each cylinder 4 is cut through to form a grid 44, upon which is supported a fine wire gauze screen 45. One end of the hollow shaft 9 may be closed, while the other end may be fitted with a discharge pipe 10, mounted so that it can be tilted at any desired angle. 101 is a valve which may be employed in the discharge pipe, if desired. In Fig. 1 the discharge pipes 10 are shown as pitched at an angle, so that the outlet end of each discharge pipe is above its respective shaft 9. When water is let into the tank 1 it will rise up around the sides and ends of the cylinders 4, and will flow through the screened passages therein, depositing any pulp that may be in suspension in said water upon the gauze screen 45.

Fig. 1.

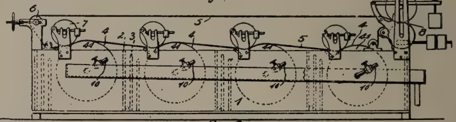


Fig. 2.

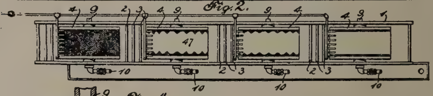


Fig. 4.

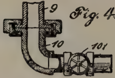
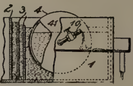


Fig. 3.



In operation the water level in the tank should be above that within the cylinder 4. The inventor accomplishes this and maintains the desired level by changing the angle of inclination of the discharge pipe 10, the open end of the discharge pipe determining the level within the cylinder.

The water level in the tank being above that in the cylinder, the water flows into the cylinder and keeps up a continuous deposit of pulp on the screened passages. The rotation of the cylinder by the apron 5 causes this thin web of pulp to be conveyed to the apron, which latter takes it off and conveys it on to the next cylinder, and so on. The force of the current of water flowing into the cylinder may be modified by changing the water level within the cylinder. While the valve 101 may be employed, its presence is not essential, since the discharge pipe 10 may be of such a length that when it is projected vertically its upper end will be above the highest water level within the tank, thus preventing circulation of water.

In Fig. 3 there are indicated water levels within tank 1 and within the cylinder 4. 46 46 are stuffing boxes in which packing may be introduced at each end of the hub, where it takes the shaft 9.

In making a plain web of paper unreinforced and of uniform thickness throughout its entire width the surface of the cylinder throughout its width is provided with the wire gauze screen 45, and with the grid work or perforated portion underneath to allow of the free circulation of water.

To make a reinforced web, certain points at equal intervals apart being built up or thickened, there is formed a plain web with a cylinder such as previously described, which makes what may be termed the "base web" of uniform thickness throughout. When this base web is conveyed to the next cylinder, on it is deposited at predetermined points spots or bands of regular or irregular shape, as desired, the same being formed by depositing pulp upon correspondingly shaped screened passages of the face of the next cylinder. (For example, see the outline of the screened face of the cylinder shown in Fig. 5.) In this figure there is illustrated the improved cylinder having the central portion covered with an annular pattern of impervious material 47, the edges of which may be straight or fluted as indicated, so as to expose only a portion of the gauze screen to the circulation of water carrying pulp in suspension. It is therefore on this portion of the gauze screen only that the pulp is deposited. Hence as the base web traverses this cylinder there will be deposited thereon a second layer of pulp of a configuration corresponding to the shape of that part of the wire gauze on said cylinder which received the pulp. A third cylinder may have a screened portion of still a different shape upon which may be deposited pulp which is finally transferred to the partially reinforced basic web to still further build up the reinforced portions.

Fig. 5.

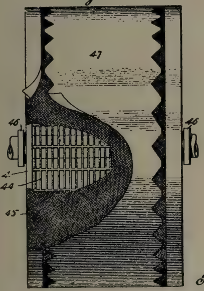


Fig. 7.

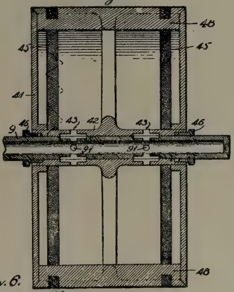
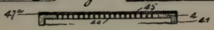


Fig. 6.



In Fig. 6 there is indicated the pattern strip of impervious material 47^a, as located between the two screens of the cylinder. In this figure the pattern strip merely appears in section. Fig. 6 shows that the place of location of the pattern strip is immaterial, its function being rather to prevent the circulation of water through the screened face of the cylinder excepting at the portions where pulp is to be deposited. In Fig. 2 are illustrated four cylinders. The one indicated at the left-hand end of the figure forms the basic web, the next adjacent cylinder applies a reinforcing strip along opposite edges of the basic web. The third cylinder deposits another layer of reinforcing pulp, and the fourth still another layer or border strip.

In Fig. 7 there is shown a slight modification of the cylinder, which is arranged to deposit the border strips or reinforcing portions on the basic web. This cylinder differs from the cylinder shown in Fig. 5 in that only those portions of the face of the cylinder upon which the web is to be deposited are cut through. In such an arrangement the cut through portions may or may not be provided with the grid work shown in Fig. 5, depending entirely upon whether or not it is necessary to reinforce or support the wire gauze screen from within. Within the barrel portion of the cylinder shown in Fig. 7 there are traverse webs 4 extending from the spokes laterally.

* * *

The Canadian Electro-Chemical Co., one of the "Soo" industries, formed to make caustic soda and bleaching powder has gone out of the business, and the machinery has been sold.

* * *

—Geo. E. Challes, Toronto, is paying a visit to the paper mills of Wisconsin and Minnesota, calling also at the Sault.

The Bleaching of Wood Pulp.

By R. W. Sindall, F.C.S., and F. Heckford, in World's Paper Trade Review.

(Continued from last issue.)

The simple method given in the previous chapter for determining the amount of bleaching powder required for any particular brand of pulp need only be resorted to by those who have no conveniences for chemical manipulation. The conditions under which a laboratory test is conducted may be varied very considerably, and experiments properly carried out will soon determine the methods necessary for efficient work and satisfactory results.

Laboratory Results and Mill Practice.

The point which may be open to question is the obligation on the part of the paper-maker to arrange the mill plant and the bleaching operations on a large scale so as to secure working conditions likely to ensure a minimum consumption of bleach. Naturally the paper-maker requires a pulp to attain a proper color with the plant at his disposal. On the other hand, the pulpmaker having ascertained the minimum quantity of bleach which will whiten his pulp objects to be responsible for any increased consumption arising from defective or insufficient plant.

It is quite easy under such circumstances to find the mill consumption 4 to 5 per cent. greater than a laboratory test. Hence it becomes a matter of some considerable importance to arrive at the exact causes of any such difference. Careful investigation along the lines already suggested will locate the difficulty, and it should be possible to distribute the extra consumption under the proper causes. This confirms the advisability of measuring the influence of temperature, time, proportion of water to air-dry pulp, the use of considerable excess of bleach liquor, and other factors.

As far as the papermaker is concerned the cost of the extra bleach required for his purpose bears no relation to the more important question of getting out a certain weight of bleached pulp per twenty-hours from the plant at disposal. There may be many reasons why the alteration of plant and system could not be considered without radical changes in the mill arrangements, and these changes would involve a greater permanent expense than that represented by the extra bleach.

The £ s. d. of Extra Bleach.

From this point of view one might be inclined to regard the whole matter as one merely of pounds, shillings and pence. With bleach at £5 per ton we should have the following example:

Soda wood taken..	5 tons				
20 per cent. bleach powder	1 ton	=	£5	0	0
25 per cent. bleach.	1.25 "	=	6	5	0
Difference ..	0.25 ton		£1	5	0

This difference means 25s. extra for bleaching five tons of the pulp quoted as an example, or an extra cost of 5s. per ton, taking no account of the additional labor in handling the excess required. As a matter of fact, such a large difference will not occur in a mill having any claim to be considered up-to-date, but we give this illustration to show what influences are at work in relation to the problem of bleaching wood pulp.

But the financial aspect of the matter is only one point, and that not always the most essential. The increase of output on the paper machine by speeding up is not always accompanied by the installation of additional plant in other departments of the mill, and the questionable devices of higher temperatures, extra bleach, and so on, are perhaps too often resorted to as a way out of the difficulty.

Effect of Temperature.

The relation of temperature to the question of wood pulp bleaching involves many important considerations, examples of which we have already given. The curious effect of local action, for example, is one of these. When live steam is blown direct into pulp which is not kept in constant circulation, the pulp gets overheated in parts. The effect is not always seen in actual practice, but a very simple laboratory experiment will show it.

In a large shallow hand-basin place a known weight of pulp broken down to a proper consistency with the water. Stir in the required amount of bleach solution. Heat the basin by means of a small flame, placed close up underneath, about half-way between the centre of the bottom of the basin and the outer circumference. Note the gradual bleaching of the pulp immediately above the flame in the basin, while the remainder of the pulp keeps the original color. Do not disturb the pulp during this experiment. Test the liquor at this spot with standard arsenic solution, and compare the test with that obtained in some other part of the dish.

Repeat the experiment with the basin floating in another basin of water. Heat the latter in the same way, and note the difference in behaviour. The pulp bleaches evenly, owing to the even distribution of the heat by means of the water bath.

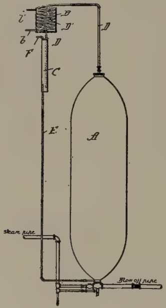
(To be continued.)

New Sulphite Process.

Frank Herbert Cloudman, of Rumford Falls, Me., has been granted a patent in the United States on apparatus for preparing fibre for paper making purposes. He makes the following claims:

"My invention is an improvement on the bisulphite method, and has for its principal object the saving of sulphur or sulphur products used in this process. The usual method of procedure in the manufacture of fibre by this process is to fill a large vessel, called a 'digester,' with wood in the form of chips, and then run in the required amount of bisulphite of lime solution, close up tightly, and apply steam by means of proper pipes at the bottom of the digester. As the temperature of the solution rises, some of the sulphur in the form of sulphur dioxide or 'gas' is driven off, and together with the air contained in the wood and steam from the heated liquid rises to the top of the digester. This accumulation of gas and air if allowed to remain would prevent the proper action of the solution upon the wood, and therefore the usual custom is to relieve or allow a quantity of these gases to escape by means of proper pipes and valves leading from the top of the digester, more or less steam necessarily escaping at the same time.

"To recover the gas and return it into the digester, I employ a condenser attached to the above 'relieving pipe.' This condenser may be any of the usual forms; but for convenience of illustrating, I have shown it in the form of a spiral pipe surrounded by water. I also employ an apparatus, which I have named an 'absorber-separator,' placed on the pipe leading from the condenser. The apparatus serves the double purpose of absorbing the gas and separating the air from the liquid. A portion of the gas will be absorbed by the water formed by condensing the steam; but to make more complete the absorption of the gas the absorber-separator may be partially filled with limestone or any other suitable substance. The absorber-separator consists of a closed pipe or vessel with proper manhole for supplying the limestone and having the pipe from the condenser passing through the upper part and extending nearly to the bottom. The outlet is placed some distance above the bottom, thus providing means for the air to separate from the liquid and rise to the top part of the apparatus, where it may be taken out by means of a valve working automatically or otherwise. The outlet pipe is carried to the bottom or any other part of the digester desired. The condenser, absorber-separator and all pipes connecting are under the same pressure as the digester. Now by placing the condenser and absorber-separator at a point higher than the top of the digester the condensed liquid can be made to return into the bottom or any other part of the digester, for the liquid will accumulate in the pipes, absorber-separator and condenser until sufficient height is reached to force it into the digester. As these are under the same pressure as the digester, it is obvious that this height or level will need to be but little higher than the level of the liquid in the digester."



Referring to the drawing, A is the digester. B is the condenser. C is the absorber-separator. D is the relief pipe leading from top of digester to the condenser. E is the pipe leading from absorber-separator to lower part of digester. F is an air valve or cock. G is a check valve. H is approximate level of liquid in digester. I is approximate level of liquid in absorber-separator. K is valve in relief pipe.

The operation is as follows: The digester A is filled with wood in the form of chips and the proper amount of bisulphite of lime solution run in with the chips. Steam is then applied at the bottom of the digester. By means of gauges and thermometers connected to the top of the digester the accumulation of gas and air can be watched, and when deemed necessary valve K can be opened and the gas, air and steam allowed to pass up through pipe D to condenser B, where the steam is condensed. Valve F will be opened (slightly, not enough to lower the pressure), either automatically or otherwise, and the air allowed to pass out of the system. The gas will be absorbed by the condensed steam and limestone, and when sufficient height is reached the resulting liquid will be forced into the digester through pipe E. This operation is repeated from time to time, or it may be continuous until the wood in the digester has been sufficiently cooked or digested.

Mr. Cloudman has also been granted a patent covering points not contained in this patent.

American Paper and Pulp Association.

The American Paper and Pulp Association, now in its 27th year, held its annual meeting on the 9th inst. in New York.

The president,, G. W. Knowlton, of Watertown, N.Y., in his address referred to the strike at Holyoke last year resulting in the shrinkage of the output of fine papers last year by about 14,000 tons, but that shortage had been made up since the strike ended, and the mills are able now to make all the fine papers the country can consume. As regards the action of the Government against the General Paper Co., he claimed that the cost of production was too near the price of news paper to admit of any reduction, and that had it not been for the strike in the western mills last summer there would be idle machines or an overstock to-day. Regarding the duty on Canadian pulp-wood going into the United States he said:—"A year ago there was not a little anxiety about the attitude of the Government in regard to the duty on prepared pulp-wood brought in from Canada. You probably remember that it was proposed to impose a duty on pulp-wood as a manufactured article, but, after due investigation and several hearings, it was decided that the law did not admit of that interpretation. An adverse ruling would have worked great hardship on manufacturers dependent upon Canadian wood." In conclusion he mentioned that United States exports of paper and manufactures of paper for the eleven months ending with November, 1904, amounted to $7,205,913, as against $6,705,985 for the corresponding time the previous year, a gain of $500,000.

The secretary reported the membership to be 355 against 348 last year. The secretary regretted to report that of late the chief object of the annual convention seemed to be the annual dinner and the serious side of the gathering appeared to have dropped out of sight. There appeared to be some foundation for the rebuke when the treasurer's statement showed that the chief item in the disbursements was $650 for a miniature clock which was presented to each of the guests at the dinner last year.

The chairman of the Book Division, Geo. E. Bardeen, complained of the condition of that branch, some mills selling at less than the cost of labor and material. In spite of this, new mills were being built, and the expansion would bring trouble to some one.

Charles McKernon, chairman of the Writing Paper Division, also complained of a poor year, due partly to the late elections, but manufacturers in this line were more hopeful. "The high price of cotton and the consequent use of large quantities of new rags for shoddying purposes have contributed, among other causes, to keep new rags very high. So it has happened that the manufacturer of 'all wool' underwear has taken away from us the cotton that we needed to make 'pure linen' writing paper! Old rags have been scarce and high during the winter, though they are coming in more freely now. It is said the high price for pulp has materially increased the consumption of rags and contributed to their scarcity. Rosin is also very high. Supplies of most kinds cost more than heretofore, though bleach has been low, owing to a war between the English and the German producers." He estimated the daily production of writing paper in the States at 350 tons as compared with 35 tons in 1860.

J. Sandford Barnes, chairman of the News Division reported on the action of the American Newspaper Publishers' Association in asking the Attorney-General to test the complaint that the combination of news manufacturers was holding up the price of paper and preventing competition. This complaint led to the suit against the General Paper Co. He then went into the conditions of the trade, beginning with the shortage of water and increased cost of pulp, to show that profits were below the normal, though slightly better than the previous year.

Frank Grubb, chairman of the Manila and Wrapping Division reported that these interests had had a fair year. The attempt to get an advance of ½c. per lb. on paper 24 x 36 of weight between 25 to 30 lbs., for 480 sheets failed at first owing to fierce competition, but was adopted in the fall with an advance of ⅛c. per lb. on paper between 30 and 35 lbs.

The Chemical Fibre Division was reported on by Frederick Bertuch, chairman, who said that 90 mills were in operation in this class of paper, or four mills more than last year. The total output was 3,375 tons per day, or 175 tons per day over 1903. In this total 2,775 tons per day were in unbleached and the balance in bleached. In the course of his report he said:—"The total daily production of the Canadian sulphite mills for the year 1904 averaged about 300 tons dry weight, which is a reduction of close to 100 tons per day, owing to the fact that two mills in New Brunswick have discontinued operations during the past year, finding that the cost of wood in their location was too high to enable them to compete successfully with other mills better situated. There has been no new sulphite mill started in Canada during the past year." As to supplies of wood he said:—"We shall get large supplies of ground wood from British North America, in fact a large amount of our supplies in this article is from there. Importations for the year 1904 from Canada amount to 119,000 tons for both unbleached sulphite and ground wood, but principally ground wood, showing an increase over the year 1903 of almost 25 per cent.; the total production, however, being reduced somewhat by the extremely cold weather." United States importations of unbleached sulphite pulp have been kept up to quite an extent during the year 1904, owing to the consumption of sulphite having increased in a larger measure than has the production. We imported during the year 1904 from Europe 40,875 tons of pulp, of which probably 35,000 tons are bleached sulphite, and the balance unbleached, The value of these importations, exclusive of freight and duty, amounts to a total of $1,764,956. The increase in importations in the year 1904 over that of 1903 amounts to somewhat about 1,500 tons, from which figures we learn that considerably more unbleached sulphite was imported in 1904 than in the year 1903, but not very much more bleached sulphite than in the year before. There is not a large quantity of domestic bleached sulphite obtainable, and the demand appears to be more than ample to take care of the supply. Prices obtained for the domestic pulp vary from 2.50 cents per pound to 2.75 cents per pound, depending upon the quality. There was quite a demand for foreign bleached sulphite in the past year, and a number of standard brands have been imported to this country, in considerable quantities. This is likely to be continued in the present year. The chemical fibre or bleached poplar soda pulp market is now more firm than was the case at the close of the year. The past year has brought with it an advance in the cost of the material, caused by the higher price of wood as well as of labor, and, as a result, although better prices are obtained, the profit to the mills is still not very remunerative. The prospect for the coming year is very encouraging, and an advance in price is looked for. To-day the price is 2.15 cents per pound delivered at the paper mill, or for foreign sales, f.o.b. port of export. The mills, however, look forward to obtaining a price of 2¼ cents per pound, in order to make a fair profit. The fact that the manufacture and sale of chemical fibre, or bleached poplar soda pulp as it is also known, have not been attended with much profit is evidenced by the fact that a mill located in one of the Central States making 50 tons per day has gone into the hands of a receiver and is now idle. There were sold in the year 1904 91,000 tons of chemical fibre, of which 9,750 tons were exported. The value of the pulp exported was $400,000. This shows a reduction in exports of this article by 50 per cent., for the reason that the domestic consumption has increased so that less pulp was available for shipment abroad. None of the mills report any stock on hand of this material. At present the demand for export is increasing somewhat.

Chairman Roberts' report on the Box Board Division recorded an attempt to market this class of papers through a selling company, which failed, owing to dissensions and the building of new mills by outsiders. The consumer is now getting his box at or below cost.

W. O. Ball, chairman of the Tissue Paper Division, reported a curtailed product owing to the low water in the spring. There were some new mills started during the year. Prices have advanced on all grades.

J. Richard Carter, chairman of the Dealers' Division, reported that trade in 1904 though not equal to 1903, was fair, and the prospects for 1905 were favorable. He called attention to the increasing practice by manufacturers of marking the weights of paper packages over the actual weight. This was more prevalent in the West than in the East.

A still more serious thing was the growing custom of selling to the consumer direct or through a broker.

The election of officers resulted as follows:—President, W. N. Caldwell, of Holyoke, Mass; vice presidents, or chairmen of sections; writing, Charles McKernon, Housatonic, Mass.; book, George T. Keyes, East Pepperell, Mass.; news, David S. Cowles, New York, N.Y.; chemical fibre and wood pulp, Theo. P. Burgess, Boston, Mass.; manila and wrapping, James Rogers, Ausable Forks, N.Y.; boards, R. B. McEwan, New York, N.Y.; tissue, W. O. Ball, Carthage, N.Y.; dealers, C. F. M. Smith, Chicago, Ill. Secretary and treasurer, Adam Luke, New York, N.Y.

A suggestion from Little & Walker, Boston, mill engineers and chemists, proposing standards for testing chemicals and materials used by paper manufacturers, was referred to the president for action.

A resolution was passed declaring that in the opinion of the Association there should be no change in the duty on paper, pulp, or wood.

Literary Notes.

A novel idea in book-making is presented in the 1905 issue of the "Science Year Book," edited by Major B. F. Baden-Powell, and published by King, Sell & Olding, Ltd., 27 Chancery Lane, London, Eng. This consists in a square cut out of the front of the cloth cover, through which is seen a calendar of the first month of the year. On raising the cover there is disclosed a ruled spacing for memos for each day of the month. When the month has expired, the leaf is torn out and the calendar of the next month is shown through the square. This bright idea is not the only new feature of this admirable yearbook which is the successor to the "Knowledge Diary and Scientific Handbook." The introduction to the diary proper consists of 168 pages of tables relating to the heavens and the earth, to physical chemistry, weights and measures, to the scientific progress of the past year, to scientific and technical institutions, etc. The book contains nearly 400 pages, 6 x 9 inches, and the price in cloth binding is only 5s. 8d., including postage to Canada.

The first number of the Canadian Forestry Journal, the official organ of the Canadian Forestry Association, has made its appearance at Ottawa. The number contains 50 pages standard magazine size, with several illustrations. Among the contributions is one by the editor, outlining the purposes of the association, one by George U. Hay, of St. John, on forest conditions in New Brunswick, one by A. H. D. Ross on the forests of Labrador, and one by E. Stewart, one of the editorial writers, dealing with the advantages Canada possesses as a field for intelligent forestry. The vital relation of forests to the future success of agriculture, manufacturing, mining, railway maintenance, etc., is clearly shown in these articles and in miscellaneous notes, and it is satisfactory to learn that Canadian public men and educationists are waking up to the immense importance of preserving the forests and regulating the cutting of timber if Canada is to maintain its position as a producing country. The Canadian Forestry Association already numbers nearly 600 members. R. H. Campbell, Dept. of the Interior, is manager.

"Helps to Profitable Paper Selling," is the title of a small book on the philosophy of successful selling as applied to the paper trade. It contains a good deal of wise and practical counsel for the man engaged in business or starting for himself, whether as a traveller or jobber. Its 100 pages are well worth careful study. Published by the Paper Trade, Chicago, Ill.

We have received from the Toronto Lithographing Co. one of the most tasteful calendars which has reached this office this year. The design is a Knight of the

Round Table mounted on his spirited white charger, the whole rendered in an imitation of pyrography, with indented lines and other devices to carry out the similitude. The calendar is entirely a Canadian production. The Kinleith Paper Co. and Ritchie & Ramsay supplied the paper, while the Toronto Lithographing Co. executed the work with ink supplied by the Ault & Wiborg Co., of Toronto.

Forestry and Pulpwood.

There is scarcely a mountain or hill in New Brunswick from whose top one may not look down upon some scene of desolation where the ravages of fire are only too evident. And what is true of New Brunswick is true of the other provinces of Canada. Fortunately a bountiful Nature soon clothes these blackened wastes with fresh foliage. But the best parts of the forest are gone; and with them often the accumulation of leaf mould, the product of successive centuries of growth and decay. The white pine as a timber tree has almost totally disappeared from our forests. The butternut or white walnut is becoming so scarce that it is now almost impossible to be obtained at any price. The same is true of the basswood. Thousands of noble hemlocks have been sacrificed for their bark. Large timber trees of the black spruce, which has been New Brunswick's greatest source of forest wealth, are becoming scarce.—Dr. G. U. Hay, in Canadian Forestry Journal.

The Sturgeon Falls Advertiser says: Reports from the timber limits show that the work of log making is well advanced, completed, in fact, in some cases, and that the gangs are now engaged hauling the logs to the streams. The season so far has been an ideal one for log making, and in this respect stands in contrast to previous seasons. The cut in the Ottawa River country from the Temiskaming district south-ward, promises to be larger than was at first thought. J. R. Booth, W. C. Edwards Co., Shepard & Morse, Gilmore & Hughson, McLachlan Bros., Gillies Bros., Pembroke Lumber Co., and A. & P. White, Pembroke, are all manufacturing logs on a large scale. In the Georgian Bay district, on the other hand, the log cut will not be more than two-thirds what it was last season. There has been a marked falling off in the production of square and waney timber this season, due to the slump in the British market. Practically all that is being manufactured is being taken off the limits in the Nipissing country, sold by the Ontario Government towards the close of 1903. However, the big end of the reduced cut is being secured on the Nipissing limits by the North Bay firms. Operators state that the cost of log production will show a slight reduction this season. While the men are being paid lower wages, they are doing better work and more of it.

Attorney-General Longley, in the Nova Scotia House of Assembly this month, reviewing the work of the Crown Lands Department, announced a surplus of $13,000 on the year's operations. He thinks the soil of Nova Scotia is capable of producing an annual growth of timber equal to any demand yet made upon it for lumbering purposes, and experience has shown that large areas of forest lands, properly administered by lumbermen, have yielded a large annual output without diminishing in any degree the volume of standing timber. The system of fire protection inaugurated in Nova Scotia, with a chief ranger and sub-rangers, will tend to minimize the danger of forest destruction by fire. With regard to reforestation, he did not consider it a practical question in Nova Scotia yet. There would be difficulty in adopting any practical scheme at present. It was much better to preserve the forests we have than to start on any large enterprise in the way of reforestation. Mr.

Longley urged the creation of natural parks or reservations at the head waters of the important rivers, which reservations would be under the guardianship of the forest rangers. In this way the natural life of the forest could be preserved, and some of the ill effects which would result from the entire denudation of the land would be avoided. This policy had awakened great interest in the Northern States.

A gentleman who is a frequent visitor to Newfoundland informs the Sydney, N.S., Record, that the outlook for the lumber output of the colony this year is not so bright as it might be. His estimate of the timber product of Newfoundland last year was 50,000,000 feet, of which the Timber Estates Company—now the Harmsworth—contributed about 35,000,000 feet. This year he estimates that the output will not be as large as last year by 5,000,000 feet, although there are four new concerns operating. The Record's informant gives as his reason that the Timber Estates Co. (Harmsworth) has lost a most efficient man in F. E. Whitman, a native of Nova Scotia, who has formed an enterprise for himself with St. John's capital behind it. The other new industries are those of Harvey & Co., operating at Badger Brook, Grant & Bell, operating five miles from Gambo, and a Cape Bretonian named Walker, who has begun operations in a modest way at Millerton.

The Drift of the Canadian Paper Trade.

Editor, Pulp and Paper Magazine:—

Sir,—I just have the last issue of the Department of Commerce and Finance in the form of the monthly summary covering the entire year of 1904. I extract from it some information that to me is very surprising, notwithstanding the fact that I have been engaged in the paper business for a good many years.

For example: The total exports of the United States for the year 1904 of paper and manufactures of paper is $7,883,686, and of this amount $1,877,860 worth was exported to Canada. When you take into consideration that these prices or values are made as low as possible for duty purposes, it is fair to assume that this would represent a business to Canada of at least two and one-half million dollars.

I would like to know if the Paper Manufacturers' Association of Canada have ever put an expert on these figures to determine exactly where the paper is, and in that way determine whether there is not a field which someone should cover and which is up to the present time without the necessary attention.

The table of values, as declared by shippers to the United States Consular agents in Canada for the year 1904 covering sulphite and ground-wood, gives a valuation of $1,394,527. Value by United States custom officials, where duty was paid into the United States, was $2,312,764.

The United States Government does not classify the importations of pulp-wood for two reasons: First, it is duty free and can be thrown in with a hundred and one other things. Second, it is the desire of paper interests of the United States that this information be not made available. I look carefully into the monthly publications of the Dominion Government Department of Trade and Commerce, to get some idea as to quantities, but I find only values. Canadian manufacturers of pulp and paper have said to me that for some reason which they are unable to understand and which no one seems to be willing to give, the statistics covering the exportation of pulpwood are not in such a way as to afford any information of value.

For instance, I find upon enquiry that there is a comparatively small amount of pulp-wood declared at consular offices of the United States in Canada, for the reason that it is duty free and therefore unnecessary. At the same time, I find that some portion is declared. For instance, for the year 1904: New Brunswick, $7,197; Nova Scotia, $81,468; Ontario, $141,602; Quebec, $615,442; making a total of $845,749.

A study of these figures and the conditions under which they are produced leads to the conclusion that the quantity of pulpwood leaving Canada for the States is far greater than is realized by those interested in having this wood converted into a manufactured article at home.

The annual meeting of the Newspaper Publishers' Association of the United States takes place in the near future, and we expect to hear some interesting speeches made touching the necessity for the removal by the United States of the duty on ground-wood, pulp and sulphite. I am told by a leading United States publisher that they would have no hope for success if they attempted to include paper, as paper was a finished material, but that they thought there was a fighting chance to succeed with ground-wood, pulp and sulphite. The paper manufacturing interest, however, feels confident that they are so secure that even the combined efforts of the press will not be sufficient to disturb them.

Yours truly,

Pate de Bois.

Quebec, 18th Feb., 1905.

Canadian Forestry Association.

The sixth annual meeting of the Canadian Forestry Association will be held at Quebec, on Thursday and Friday, 9th and 10th March, in the City Hall. The following papers have already been arranged for:—"The Forests of New Brunswick," T. G. Loggie, Fredericton, N.B.; "The Forest Resources of Quebec," J. C. Langelier, Department of Crown Lands, Quebec; "Forest Administration," P. G. Owen, Secretary, Quebec Limit Holders' Association; "Forest Insects," Rev. T. W. Fyles, Levis, P.Q.; "Forest Fires in British Columbia," R. W. Brock, Queen's University, Kingston. A summary of reports on the fires in British Columbia during 1904, received by J. R. Anderson, Deputy Minister of Agriculture, will be presented. Jas. Leamy, Dominion Timber Agent at New Westminster, will also report on the work of the fire preventive service on Dominion Lands in British Columbia. An address, on "Northern Quebec and Labrador" will be given by Commander A. P. Low, of the Geological Survey. Hon. L. J. Tweedie, Premier of New Brunswick, with an officer of the Crown Lands Department will represent that province, and Hon. J. W. Longley will represent Nova Scotia. Several of the leading foresters from the United States will also be present and assist in the discussions. A banquet will be held on Friday evening. The leading railways will grant a return trip for single fare to delegates and their wives on obtaining certificates where tickets are purchased. Particulars may be had of the Secretary, R. H. Campbell, Department of the Interior, Ottawa.

Bank Notes and Paper Money.

A paper contributed by a French gentleman to the Wochenblatt für Papierfabrikation contains an interesting review of the manufacture of paper for bank-notes and paper money with regard to the question of imitation.

Passing over the introductory sentences, in which stress is laid upon the importance of producing a bank-note which shall be a guarantee against imitation, the author goes on to say that this guarantee depends on two elements in the production of such notes, namely, the paper itself and the printing.

With regard to the latter, it seems to be generally the opinion of bankers that this is the more difficult to copy; thus, the United States and the great proportion of the South American States make use of a very tough paper, hard-sized, which will stand much wear and tear, and rely for a guarantee against imitation only on a many-colored design printed thereon. Much ingenuity is brought to bear on the design, in which a number of fine lines are so printed that they confuse and tire the eye of the draughtsman attempting to copy them. They further contain a number of irregularities and slight errors which are known only to those accustomed to handling them, and which serve for the purpose of detecting spurious copies.

It would lead too far to go into the numerous inventions which have been applied for the purpose of rendering the design difficult to copy, but all these obstacles placed in the way of the evil-minded serve but little purpose when resource is had to photography. Whereas the design printed upon a note can be copied by photographic means, the watermarking serves as a better guarantee against imitation.

The writer seems to imagine that the lines of the watermarking are weak points in the paper, and that for this reason a paper with strongly defined watermarks would be unsuitable for standing the wear and tear to which it would be subjected. This question of watermarking weakening the strength of a paper is much open to question. It is now generally recognized that a watermark is not necessarily the weakest point in a paper, as in its formation only those fibres parallel to the line of the watermark are forced to one side. There is no doubt, however, that great difficulties stand in the way of producing a paper thoroughly strong and hard sized, which will stand the friction and constant wear in the hands of the public.

This question was first thoroughly gone into by Lavoisier, the well-known French chemist, at the time of the "Assignat." He particularly mentions hemp and unbleached flax as suitable for bank-notes, as these fibres were not much used in commerce, and, therefore, would give greater difficulty to anyone attempting to copy.

However, there are nowadays plenty of papers, such as extra strong post, bank post, bank, which have so strong a resemblance to the paper of which bank-notes is prepared, that ordinary persons could easily be deceived.

Fibrous material for the paper.—Three varieties of such material were examined:

(A) Hemp and flax in the proportion of 70 per cent. hemp and 30 per cent. flax. The fibres were of semi-white shade and in a half-raw state.

(B) Same mixture as A, but with the addition of a proportion of cotton.

(C) Ramie.

Much experience is required to carry the beating of these materials to the right pitch so that the finished material has the greatest possible strength and uniformity. The hemp and flax fibres require to be beaten longer than the others. This, however, produces such a wet beaten pulp that considerable difficulty is experienced in working with a hand mould. The product is a paper which has a cloudy appearance when uncoated. Tests on sheets made in a hand mould gave the following results:

(A1) Pulp. Thirty per cent. flax, 70 per cent. hemp. In a half-raw state, half white. Without size or fillers. Wet beaten.

(A2) Same, animal sized, dried in air.

(A3) Same, with 1 per cent. to 2 per cent. of rosin size, dried on the machine, and not beaten so wet as previous samples.

(A4) Same, animal sized.

	Breaking length in metres.			Stretch per cent.		
	Direct (1)	Direct (2)	Mean	Direct (1)	Direct (2)	Mean
A1	8,819	7,819	8,319	6.7	5.7	6.2
A2	11,454	9,570	10,512	7.5	8.0	7.75
A3	7,548	6,180	6,864	6.9	5.5	6.2
A4	9,014	7,162	8,118	5.4	5.2	5.3

All these papers were very transparent. A2 had a good rattle, but was less resistant to friction. A3 was unsatisfactory.

(B1) Pulp. Eighty-five per cent. flax and hemp mixture, 15 per cent. of well-beaten cotton. Unsized.

(B2) The same, animal sized.

(B3) The same, with 1 per cent. to 2 per cent. of rosin size. Not so wet beaten.

(B4) The same as B3, but subsequently animal sized.

	Breaking length in metres.			Stretch per cent.		
	Direct (1)	Direct (2)	Mean	Direct (1)	Direct (2)	Mean
B1	7,768	6,424	7,096	10.5	10.3	10.4
B2	9,828	8,604	9,216	14.1	13.9	14.0
B3	5,724	4,788	5,256	4.3	4.1	4.2
B4	7,508	5,607	6,557	6.6	6.6	6.6

(C1) Pure ramie pulp without size or filler.

(C2) The same, animal sized.

(C3) The same, rosin sized, as in above cases.

(C4) The same as C3, but subsequently animal sized.

The ramie fibres have a tendency to work wet, and particular care must be taken that the pulp is well refined without being beaten too wet.

	Breaking length in metres.			Stretch per cent.		
	Direct (1)	Direct (2)	Mean	Direct (1)	Direct (2)	Mean
C1	7,308	4,916	6,112	5.6	4.7	5.15
C2	8,506	5,954	7,230	17	16.8	16.9
C4	6,618	5,243	5,931	5	4.5	4.75
C3	7,166	5,478	6,319	6.6	6.4	6.5

Twenty-eight to twenty-nine hours' beating, and one to two hours in a small hollander. Paper was also prepared from stuff obtained by stamping, and such paper proved to be somewhat stronger.

It will be seen that the greatest strength in the case of unsized material was obtained in the case of the hemp and flax fibres, and this strength somewhat reduced by the addition of cotton. The pulp prepared from ramie was the weakest. The effect of sizing varied in the three cases.

With animal size the strength of the hemp and flax mixture was increased 43 per cent., of the same containing cotton 30 per cent., and with ramie only 18 per cent. With rosin size the strength of the hemp and flax mixture was reduced 6 per cent., the same with the addition of cotton 1¼ per cent., and the ramie 3 per cent. It appears, therefore, that the ramie fibres are less sensitive to the influence of sizing than the others. This follows to a certain extent, from the raw state of the ramie fibres.

The presence of incrusting matter on the fibre interferes with the development of the greatest strength, and also with the absorption of animal or rosin size. On the same grounds we may explain the difficulty in sizing papers which are prepared from only slightly boiled fibres. It is well known that with such papers the sizing is more easily accomplished when a proportion of mineral filling is added to the pulp. The filler of itself has the power of absorbing the size, and in this way reduces the harmful action of the incrusting matters. When to hemp and flax a proportion of cotton is added, the strength is not so susceptible to the action of the sizing as without the addition of the cotton. The cotton employed was raw cotton, which had undergone but little treatment by boiling, and was unbleached. It is also noteworthy that the presence of rosin size increases the capacity of the pulp for taking up animal size. The first result of these investigations led the author to discard ramie for the pulps in question.

It is certainly true that one of the largest European banks employs ramie for their papers. The author, however, doubts the advantage of this course. The ramie fibres give a weaker paper than the hemp and flax mixtures, and the paper is less suitable for the purpose of watermarking, on account of its transparency. In spite of this the bank in question uses ramie fibres for the production of paper with watermarking.

It is scarcely to be imagined that ramie fibres should be added to the pulp for making bank-note paper for the purpose of preventing imitation. In such papers the presence of ramie fibres could only be detected by the microscope, and no cashier, whether of a large or small bank, and still less the general public, would be in a position to make such an examination. Its only use could be in those cases where legal proceedings are taken.

In passing, we may note that it has been proved that the single fibres of ramie are stronger than those of hemp and flax. These differences are noteworthy, but where we have to consider the strength of a paper it by no means follows that this is proportional to the strength of the individual fibres; but it is also dependent on the manner and degree in which they are felted.

Another fibre which the author has had but little opportunity of examining is phormium (New Zealand flax). The Russian 100-rouble notes are made in two layers, one of which consists of phormium and hemp pulp, and the other of a well-refined bleached hemp pulp. Phormium fibres yield a strong paper with a breaking length of 3,000 to 4,000 metres, even when bleached. They felt well and produce a resistant paper, and we are of opinion that such is suitable for bank-note papers with watermarking. However this may be, a paper of a desired strength can only be obtained with wet beaten pulp resulting in a transparent paper, so that the printing has to be strengthened. In the author's opinion a fibre which would give the needful opacity is that of the paper mulberry (broussonetia papyifera). This tree can be cultivated, and grows well in Europe.

(To be continued.)

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MILLS IN THE PORTNEUF DISTRICT.

(Correspondence of the Pulp and Paper Magazine.)

St. Bazile, 18th Feb.

The mills at Portneuf of Jos. Ford & Co. are running very well, if we take in consideration the low water prevailing this year on the Portneuf river. The mill of the Montreal Paper Co. is also doing fairly well. Messrs. Ford & Co. are now transporting machinery to their pulp mill at Glenford, St. Christine, where they intend making paper next spring, at the same time continuing their big mill on board as before. Mill No. 1 of the Montreal Paper Co. at St. Bazile was stopped part of a week this month for repairs. It has resumed work again. The proprietors of the paper mills on the Portneuf river last year built a big reservoir dam on Lake Sept-Isles, a lake which is the outlet of seven other lakes in the Laurentides behind St. Raymond. This reservoir, or dam, was built for the purpose of keeping up the supply of water in dry weather. It was found very good for the mills to have this reservoir this winter, but unhappily it is all over now, there being no more water in the lake. It is said that the manufacturers of this district will ask the Government to help them in building dams on Lake Sergent, another big body of water, and they hope that the Government will be only too pleased to do so, as all the farmers who are established along those lakes and rivers will have the means of driving down their wood to sell, instead of leaving it there in the bush, as they are too far from railways. The mill of the Montreal Paper Co. at Pont Rouge is now pretty far advanced, and they expect to start it some time in May. The horizontal water wheels are now placed, and the flume is all finished. They expect to develop about 4,000 horse-power. The Jacques Cartier Pulp and Paper Co. are now receiving a lot of wood pulp, and are also at the same time making a big quantity on the river. Pulp is selling very well just now, and bringing a good profit.

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PERSONAL.

John Craig, managing director of the Imperial Paper Mills at Sturgeon Falls, visited Toronto a few days ago.

The business of Harry B. Wood, dealer in wood pulp and chemicals, Cathedral St., Manchester, England, has been turned into a joint stock company, under the name of Harry B. Wood, Limited, Mr. Wood being managing director.

Among the Canadians who attended the convention of the American Paper and Pulp Association in New York this month were Carl Riordon and Geo. E. Challes, of Toronto; F. A. Ritchie, of the Kinleith Mills, St. Catharines; S. J. B. Rolland, of the Rolland Paper Co., Montreal and St. Jerome; F. W. Spicer and the Messrs. Clark of the Seven Islands, Que., pulp mills; H. Biermans of the Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.

The office of general manager has been created by the International Paper Co. of the United States, and has been filled by Fred. H. Parks, vice-president and manager of the department of manufacture for the company. Heretofore, Hugh J. Chisholm has been both president and general manager, but Mr. Parks will now relieve Mr. Chisholm, who has not been in the best of health during the past year, of a good deal of the department work. This company has large timber limits in Quebec.

D. Lorne McGibbon, general manager of the Canadian Rubber Co., is one of the foremost industrial organizers of the Dominion. He gained deserved prominence among Canadian manufacturing interests some few years ago by his successful management of the Laurentide Pulp Co. (Grand Mere, Quebec), the largest pulp and paper concern in Canada. He has met with marked success in his present important position, and under his control the Canadian Rubber Co. has made remarkable progress, in keeping with the great expansion of the Dominion. Mr. McGibbon is one of the leading members of the Canadian Manufacturers' Association, and is also identified with many other kindred organizations.—Winnipeg Commercial.

John Anderson Marquis, father of ex-Mayor A. W. Marquis, of St. Catharines, died in that city on the 13th inst., aged seventy-three. He had been accountant at the Riordon Paper Mills for the last thirty-five years, and was very highly esteemed. Prior to going there he held the position of accountant in the Bank of Montreal at Toronto and other places in Ontario. He was a prominent Mason, and was commonly described as one of the finest men who ever lived in that part of Canada. He leaves a family of four.

After a long illness William Blackhall, of the firm of Blackhall & Company, bookbinders and manufacturing stationers, Toronto, died on the 9th inst., aged forty-four years. Deceased was a son of the late William Blackhall, of Toronto, and was born in Oswego, N.Y. He succeeded his father in the business twenty-two years ago at the time of the latter's death, and developed the firm's trade extensively. A wife, two sons, Chester and Bert, and three daughters survive. The sons will carry on the business.

* * *

THE PULP MILLS AT FORT FRANCES.

An Ontario charter has been granted to the Ontario and Minnesota Power Co., heretofore familiarly known as the Backus Syndicate, which proposes to erect extensive works at Fort Frances, Ont. The head office will be in Toronto, and the incorporators are Edward W. Backus, of Minneapolis; Robert A. Grant, barrister, and Alex. McKenzie, Wm. H. W. Templeton, G. F. McFarland, all of Toronto, are incorporators. The capital is $3,000,000.

Regarding the projects of this company, J. A. Osborne, of Fort Frances, informs the Port Arthur Chronicle that the power company's engineer and contractor are on the ground, and machinery and material for constructing the big dam across Rainy River is arriving. The contract for the work has been let to Maguire & Peniman, of Providence, R.I. Work will be commenced on the dam this month. About 40,000 barrels of cement will be used in the construction, and the cost will be upwards of $3,000 000. Another $2,000,000 will be expended in building an immense flour mill and the largest pulp mill in Canada. The latter will have a capacity of 300 tons of pulp per day. On the Minnesota side of the river at International Falls, a paper mill will be erected, which will practically use all the product of the pulp mill. The International Terminal and Bridge Company proposes to erect a railway bridge across the river, and have given notice for incorporation. This company is subsidiary to the Minnesota and International Railway Company, which in turn is a branch of the North Pacific Railway. The M. and I. have their line built to a point sixty miles from Fort Frances, to which place the road is projected, and where they expect to have the rails laid by September of the present year. One hundred teams are engaged in hauling supplies over the frozen muskeg to the camps along the right of way. The M. & I. will make Fort Frances their terminals, where it will connect with the Canadian Northern Railway.

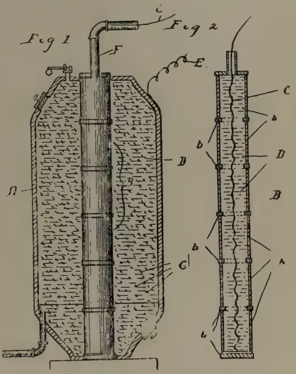
* * *

NEW PROCESS IN SODA FIBRE.

Among the patents recently issued in the States is one to Isidor Kitsee, of Philadelphia, for a new method of producing soda fibre. It is the aim of the inventor to reduce the cost. In his specifications the inventor says: Formerly most of the caustic alkali (hydrated sodium) used in the process was produced by chemical action; but in later days the process of producing this caustic with the aid of the current was substituted. This process consists therein that a chloride of sodium is electrolyzed in an electrolytic apparatus with the aid of the electric current, producing a caustic and liberating the chlorine.

Different methods are used to produce the best results, for if the proper precautions are not taken, so-called hypo compounds are formed in the negative compartment, destroying the usefulness of the product. For this and other reasons the production of the hydrated compound is a complicated process, and the employment of the moving mercury cathode, whereby the generated sodium is made to produce an amalgam with said mercury, is now universally practised. With this arrangement the amalgam, consisting of the metallic sodium and mercury, is subjected to a water bath, whereby the sodium is, as a hydrated compound, liberated and dissolved in the water, and is then again produced as a solid compound by the evaporation of the water, and in such solid state the hydrated sodium is made an article of commerce, to be used in the process of producing pulp out of fibres.

The aim of my invention is to obviate all these intermediate steps, to obviate the necessity of producing an amalgam, of dissolving out the sodium in the form of a hydrated compound, of evaporating the water, and thereby regaining the compound as a solid, and, in fact, to obviate all those intermediate steps, and enable the manufacturer of pulp to produce the necessary causticity in conjunction with the cooking or boiling of the fibre.



In the drawings, Figure 1 illustrates in a partial section and partial side elevation one form of a digester or boiler embodying the invention, and Fig. 2 is a sectional view of one of the compartments of said digester.

A is the boiler or digester, preferably of a construction as used to-day. B is a compartment contained in the boiler. This compartment is here shown in tubular form. In reality this compartment represents a large porous cup made of clay or earthenware, but as it is impracticable to make a porous tubular compartment out of one solid piece of the required dimensions, there is illustrated the preferred form, which consists of a series of porous sections b, each about one foot long, these sections formed into one mechanical unit, with the interposition of the non-porous rings b′, formed so that the ends of the sections may be cemented into the cavities of the rings. The shape of this compartment may be varied to suit requirements, the only necessary consideration being that the compartment should be porous enough so as to allow the "ions" liberated through the action of the electric current to travel from and into the compartments. The inner space of this compartment is provided with the conductor C. This compartment, as well as the digester proper, contains the liquid D, and the digester proper also contains the chips or other fibres G. In fact, the digester is made an electrolytic apparatus, the conducting-shell of the digester forming the cathode of the apparatus, and is, therefore, provided with the conducting-wire E, adapted to be connected to the negative pole of the charging circuit. The porous compartment is the porous septum, used in such electrolytic apparatus, wherein the radicals contained in the compound to be electrolyzed should be separated from each other, and this is the compartment in which the anode C is contained. This anode is, therefore, provided with means to connect the same to the positive pole of the charging-circuit.

The liquid to be used in this apparatus is preferably a strong brine.

The modus operandi is as follows: The inner or positive compartment of the digester is provided with the salt solution, and the outer or negative compartment is provided with the fibres to be treated, and in addition thereto with salt solution sufficient to cover the fibres with said liquid. The digester is then hermetically sealed up. The steam or other source of heat is applied, and after a short time the conductor C is connected with the positive pole of the source of electricity, and the conductor E is connected with the negative pole. The action of the electric current on the briny liquid is such that the salt is electrolyzed, liberating the chlorine in the porous compartment and liberating the sodium, which is instantly reacted upon by the water, producing a hydrated alkali, therefore a caustic, in the outer compartment. This caustic, with the aid of heat and pressure produced by the steam or other source of heat, will extract the resinous and intercellulose matter from the fibre in the same manner as this matter is extracted to-day, if the solution is made caustic by dissolving the solid alkali compound in common water.

A density of about one hundred amperes for a digester of, say, eight feet in diameter by six feet in depth, is sufficient for all practical purposes; but where a stronger causticity in a shorter time is required the density should be raised.

The chlorine accumulated in the inner space of the compartment B may be carried off with the aid of the pipe F to any desired point, and it is contemplated that this chlorine may be carried to large vats containing water, and there be used as an agent for bleaching the pulp coming from the digester after passing through the usual process of washing.

⁂

QUEBEC LEGISLATION ON THE PULP TRADE.

It was Mr. Parent's bounden duty to have insisted upon the manufacture in Canada of all wood cut upon lands belonging to the Crown, as is done in the neighboring Province of Ontario. The failure to do so is a crying injustice to the people of the Province of Quebec, who have a right to expect that the raw material which belongs to them shall only be disposed of on the express condition that they themselves, in preference to foreigners, shall be afforded the opportunity of manufacturing it. Every unprejudiced student of these questions must at once agree that the people of the Province of Quebec are being unjustly discriminated against by the present administration. Thousands and hundreds of thousands of the sons and daughters of Quebec have expatriated themselves because the factories of the United States afford them that lucrative employment which is denied them in their old home. For much of this exodus the lack of a proper degree of protection of Canadian industries is responsible. Much more of it may be prevented, however, and many of those now earning their living far from their own home and country may be brought back to the Province of Quebec by the opening up here of new industries. To the Federal Administration necessarily belongs the responsibility of placing the tariff at a figure which will so protect Canadian industries as to insure the successful establishment of manufacturing enterprises throughout the Dominion. But in the matter of pulp manufacture a heavy responsibility, in the absence of federal legislation, rests upon the shoulders of the local Government.—Exchange.

⁂

TRADE NOTES.

The Canada Printing Ink Company has been given power to increase its capital from $40,000 to $60,000.

The Howe & Hubbs Company, of Buffalo, N.Y., will open a Canadian branch warehouse in Toronto. Besides doing a general paper business, they will have the agency for the paper bags made by the Continental Paper Bag Company, Rumford Falls, Me.

⁂

—The Province of Quebec Limit Holders' Association will hold its annual meeting at the Chateau Frontenac, in Quebec City, on Thursday 9th March, at 3 p.m. Paul G. Owen, Union Bank Building, Quebec, is secretary-treasurer of the Association.

⁂

ODOR IN SIZED PAPERS.

It is not generally known that the peculiar sickening odor in some kinds of sized papers is caused by the development of a microbe which causes the sizing mixture to "turn." A sample of sized paper having this odor was sent recently from a large paper mill at Annonay, France, to E. Pozzi-Escot, director of the chemical department of the Malzeville Laboratories.

"With resinate of alumina or starch," says Mr. Pozzi-Escot, "I do not know whether microbes are injurious or not, but the sickening, repulsive odor is caused by the action of a microbe. This I ascertained as follows: I subjected the samples of paper treated with turned size, received from the Annonay mill to microbic analysis, and also chemical. I found the gelatine was peptonized. It was the case of a microbe digesting and peptonizing gelatine, thus making it unfit for sizing. The evil being discovered, it was not a difficult task to find a remedy. Practical conclusions can be drawn from this study, which henceforth will remove all risk in papermaking. In the first place, the manufacturer should sterilize the gelatine solutions by employment of antiseptics, for which purpose fluorides are to be recommended. On the other hand, the paper must be protected, as far as possible, against causes of infection; the last washing might be given with weak antiseptic solutions. Or, again, the paper might be kept in warehouses artificially ventilated with antiseptic air by aid of ozone, or any other system. Finally, the drying cylinders should contain very pure air, if possible, free from noxious germs.

"I think that employment of ozone as an antiseptic is self-indicated. However, the manufacturer, knowing the cause of the mischief, can select the remedy according to the sizing material used."

* * *

CHINA CLAY.

China clay is one of the few natural products which we are still obliged to import from England. Most of this comes from the great mining district of Devon and Cornwall, the very best quality being the Cornish. The clay is dug from deep pits, and the sand and refuse worked out by filtering. The sand and other heavy particles sink, while the clay solution is run into immense pits, of about 1,000 tons capacity. As these pits fill up there is a sediment of pure clay deposited on the bottom, the proportion being about six inches of clay to 4 feet of clear water. The clear water is run off at one end of the pit as the water holding clay in suspension is let in at the other end. Gradually the deposit of clay deepens until the pit is full, when the clay-carrying stream is diverted into another pit. The wet clay in the first pit is then dried on porous bricks lined with steam pipes, and when thoroughly prepared is packed in half-ton casks and shipped to America.

The clay pits of Cornwall have been worked for centuries. Many are hundreds of feet in depth, and resemble huge valleys. One of the largest of these has been in operation continually for over one hundred years, and now yields 36,000 tons annually, two-thirds of which is quartz sand and one-third the finest grade of kaolin, or white clay.

In the United States there are many clay mines, principally in Florida and South Carolina, although deposits have also been found in other Southern States, but the product is of inferior quality, and little of it is used in the paper industry. The dealers are constantly on the watch for a good American clay, but never yet have found a domestic clay equal in whiteness and fineness of texture to the English product. Nearly 120,000 tons of English clay are imported into the United States annually, while the total domestic output is but 40,000 tons. A duty of $2.50 per ton is paid on the imported article.

While there are deposits of china clay in Canada, none has been mined to any extent.

J. M. Bell, attached to one of the surveying parties in North Ontario reports that he has examined the clay of the Moose River Basin, and finds that the deposits of kaolin and other clays in that region are larger and more valuable than hitherto supposed, and no doubt these will be developed for the benefit of the Canadian paper trade in the near future.

This material is on the free list in Canada. Of a total of 202,119 cwts., valued at $74,327, imported into Canada last year, 170,126 cwts., valued at $60,022, came from Great Britain and the balance from the United States. The United States imports consist largely of clays originally imported from Great Britain.

* * *

—A steam jet has been recommended recently as one of the best means of keeping the wire cloth of the paper machine clear from the accumulations. At the outset the use of such a harmless means has obvious advantages over sulphuric acid and other strong chemical reagents which are commonly employed. A writer in the Wochenblatt für Papierfabrikation recommends that the spraying pipe, which is connected with a ¾-in. steam pipe, should be placed on the underside of the cloth, about 4 in. in front or behind one of the tension rolls or guide rolls. The spray should not be more than 2 in. away from the wire. It is preferable to apply the spray immediately after the machine stops work, the wire being kept running round several times during the treatment. Of course, if the wire has once got badly clogged, it is necessary to employ violent means to cleanse it, but if once fairly free and sprayed regularly, say once or twice a week, there will be no difficulty in keeping it in good condition.

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This is Why.—The Ideal Packing consists of two wedges backed by a soft oil cushion, as may be seen in illustration. Its principal features are the construction of the wedge sections and the oil cushion. These wedges are made of a high grade fine woven cotton duck and rubber, and have interposed between their adjacent surfaces a thin strip of soft anti-friction metal, which renders the adjustment of the wedges sensitive, positive and easy, with the least possible pressure on the gland. The backing, or oil cushion is made of an asbestos core, over which is braided wire covered strands, which add considerable strength and prevents the fibres being separated when subjected to pressure. The core acts as a reservoir for the lubricant, which is a high test cylinder oil. The several parts of the packing are coated with best foliated graphite before being put together.

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RAG AND PAPER STOCK MARKET.

Montreal, Feb. 18th, 1905.

The scarcity of all lines of paper-making materials, noted in last month's report, still continues. Prices are gradually advancing, and would do so much more quickly if the capacity of many mills was not reduced by short supply of water power. Meanwhile the consumption of paper is going on, and in a month or two when the mills will be running with full power, it looks as if there would not be stock enough to go round. A large part of the stocks held here have been moving into the United States. Bagging, which for the past two years has been hardly salable, and of which there were large accumulations here, has all been disposed of, most of it going to Northern New York and Ohio.

European stocks of paper-making rags are held very firmly, and it is difficult to place orders. We advance most of our quotations for this month:

White shirt cuttings	$5.25	to	$5.75
Light print cuttings........	3.75	to	4.25
Unbleached cuttings	4.00	to	4.50
Corset cuttings	4.00	to	4.50
White shoe cuttings	4.50	to	4.75
Colored shoe cuttings	2.75	to	3.25
Blues and thirds	1.40	to	1.50
Roofing stock	.60	to	.70
White paper shavings	1.50	to	2.00
Colored paper shavings	.60	to	.75
Common waste paper	.40	to	.50
Manilla rope	2.00	to	2.25
Old bagging	.55	to	.70

PULP MARKETS.

At the time of going to press the situation in the Canadian pulp market remains much the same as last month. The pulp mills of Eastern Ontario and Quebec manage to keep up supplies of wood, but water is low in several instances, and none are able to turn out all the pulp that could be sold. United

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Bell Patent Flat Wires for Book Papers

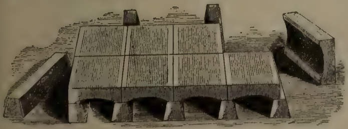
States mills are having no easy time in getting supplies of wood from Canada on terms that enable them to make a profit. The mills of the Carthage and Sandy Hill districts, as well as some from New England, are drawing peeled wood by rail all the way from the Lake St. John district of Quebec, where they pay $4 a cord. The freight costs $5.80 a cord to northern New York points, so that the cost of laying down the wood at the mill is about $10 a cord in even the favorably situated Watertown district. Some pulp-wood dealers in the Lake St. John district are getting $4 a cord with the bark on, and in the St. Lawrence valley $6.50 a cord is being asked, and in some cases obtained. The price quoted at Canadian mills for mechanical pulp is $14 on yearly contracts and $18 for immediate delivery.

In New York domestic sulphite, bleached, is quoted at 2½ to 3¼, and unbleached at 1.85 to 2.10. Soda fibre, domestic bleached, 2¼.

The Canadian wood situation in the United States market is regarded by the Paper Trade Journal as follows: "Canadian ground wood is the only kind that is being offered in the New York market. On this the price remains the same, namely, $23.50 to $26, delivered, dependent on the distance of the buyer. There is evidently but little buying of pulp in the open market. In view of the short supply at the mills and the difficulties of manufacture and delivery, it is surprising that the market is not more active.

(Continued on page 17).

Drainer Stones



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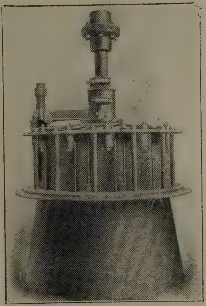
The Samson Turbine



We have supplied many of our Samson turbine water wheels to pulp mills for direct connection to grinders, for driving beaters, and, in fact, for all power purposes.

The Samson has an even and regular speed under all changes of load, ensuring better and more even quality of pulp and an even output from the paper machines.

Of course the work placed on a water wheel when used for this purpose is very trying, but the Samson has never yet failed, under even harder conditions.

It also costs less per horse power than any other turbine.

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In Canada under Numbers 68,093, 71,746, 72,118 and 77,818; and also
The Guard-Board patented by J. H. GATELY, in CANADA
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£125, £150 and £200 c.i.f. U.K. Ports.

Beaters and Edge Runners can be filled in from one to two minutes if the pulp is first disintegrated by one of the Wurster Engines, while the output is larger with the same power. These Engines do four times the work of stones, and neither shorten, affect, crease, or wet the fibre in any way, nor change the color or the sizing. They can also be used for Kneading Clay and other Fillers, and Bleaching Powder.

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ENGLAND. 2

ow that the winter season is within ix weeks of its end it is not thought ikely that there will be anything approaching a famine in ground wood."

In the British and European counries the same scarcity of pulp and rags nd paper stock is reported as in merica. Of the Scandinavian market he Farmand of Christiania says under late 4th February: "No sales of mehanical wood pulp have been reported o us this week, but the mills are daily n receipt of more or less urgent enquiries through outsiders, a tolerably ure sign that foreign consumers are beginning to anticipate the pinch of the coming scarcity. It is the impression on this side that foreign buyers mutually assist each other, as best they may, but when the shortage of production on this side has lasted for some time longer, such makeshifts will no longer avail." Meantime the Scandinavian paper mills are buying up all the stock of pulp available, which may make it all the harder for European mills when they have to purchase pulp.

Prices for 50 per cent. moist mechanical are quoted in the London and Manchester markets at £3 to £3 2s., prompt delivery, and £5 17s. to £6 6s. for dry, prompt delivery.

* * *

BRITISH CHEMICAL MARKET.

The market remains steady, with a fair export demand. Quotations:—Ammonia alkali, 58 per cent., £4 10s. to £4 12s. 6d.; caustic soda, 76-77 per cent.,

(Continued on page 18).

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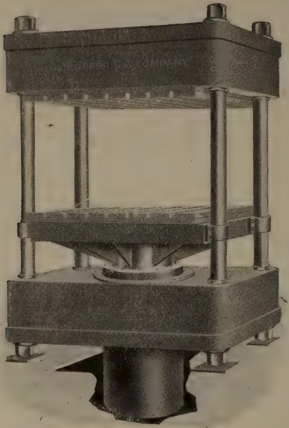

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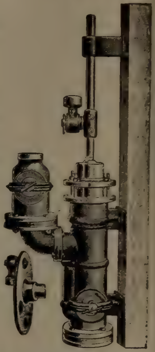

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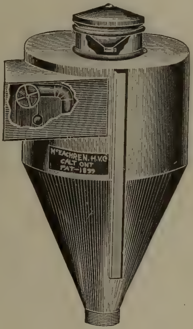

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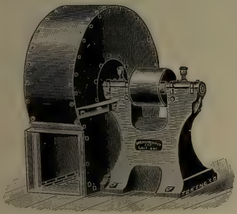

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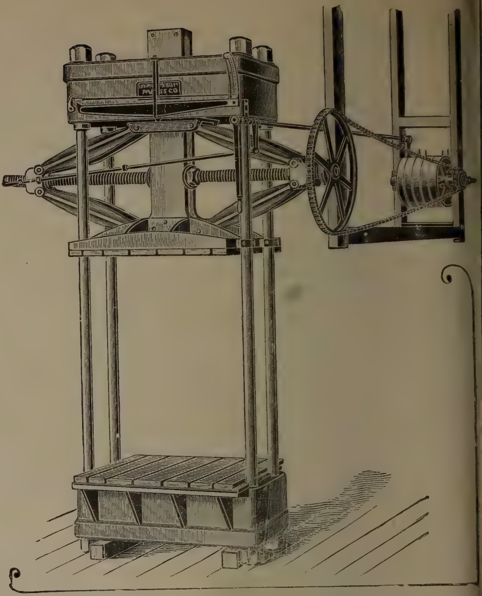

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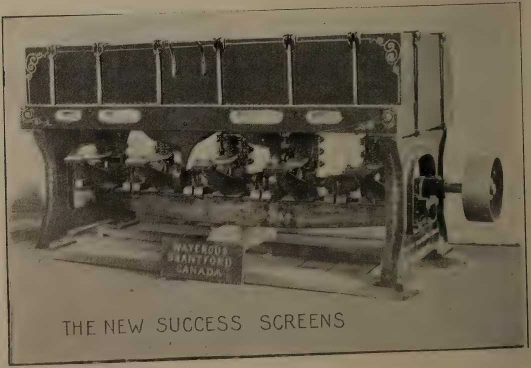

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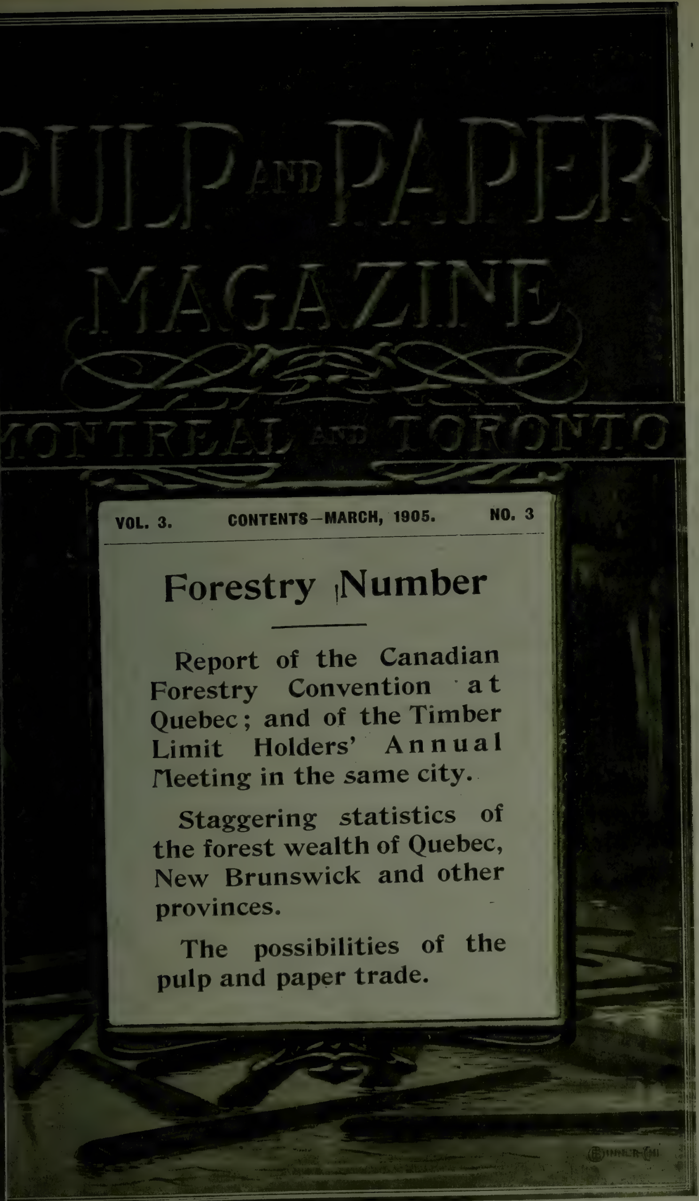

PULP AND PAPER MAGAZINE

MONTREAL AND TORONTO

VOL. 3. CONTENTS—MARCH, 1905. NO. 3

Forestry Number

Report of the Canadian Forestry Convention at Quebec; and of the Timber Limit Holders' Annual Meeting in the same city.

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The possibilities of the pulp and paper trade.

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INDEX TO ADVERTISEMENTS.

eloit Iron Works 23
enson & Co., W. T 10
entley & Jackson 4
ertram's, Limited 6
lack-Clawson Co. 7
owater & Sons, W. V 26
redt & Co., F. 10
runner, Mond & Co., Limited 18
anada Paper Co. 25
anadian Rubber Co. 8
arrier, Laine & Co. 8
astle, Gottheil & Overton 9
heney-Bigelow Wire Works 14
hristie, J. 26
hristie, Limited, George 3
ousland & Co., A. 10
avis & Co., F. H. 17
astwood Wire Mfg. Co 2
merson Mfg. Co 13
airbanks Co., The 13
reese, Jean 3
amilton Mfg. Co., Wm 15
ardy, George F. 9
awksworth, Alfred 12
ay Knife Co., Peter 19
ough, R. 26
uyck & Sons, F. C 5
nternational Pulp Co. 9
enckes Machine Co. .... 12 & 24
ohnson & Sons, Limited, C. H 6
enyon & Son, James 19
Klipstein & Co., A. 11
Kimball, Herbert S. 9
Knight & Co., John 21
Little & Walker 9
McOuat & Son, T. 18
Paton, Thomas L 3
Porritt & Sons, Joseph 10
Porritt & Sons, Limited, Samuel 26
Porritt Bror. & Austin 6
Perrin & Co., Ltd., Wm. R. 18
Pringle & Son, T. 9
Pusey & Jones Co 16
Quebec & Lake St. John Ry. 9
Reich & Co., O. 18
Seymour & Guest 9
Sheldon & Sheldon 21
Smith Co., S. Morgan 25
Snell, Samuel 15
Sullivan & Co., C. F. 10
Union Screen Plate Co 3
Vogel, C. H 9
Wallace-Jaastad-Drewson 18
Wertheim & Co., A. 20
Waterous Engine Works Co., Ltd 24
Whittaker, Richard 11
Wilson, Paterson & Co. 12
Winn & Holland 18
Wurster, Dr. C. 16
Young, J. S. 25

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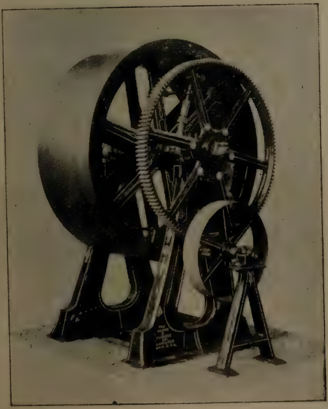

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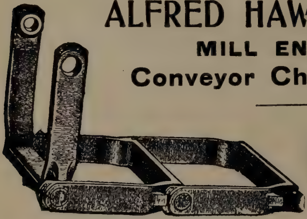

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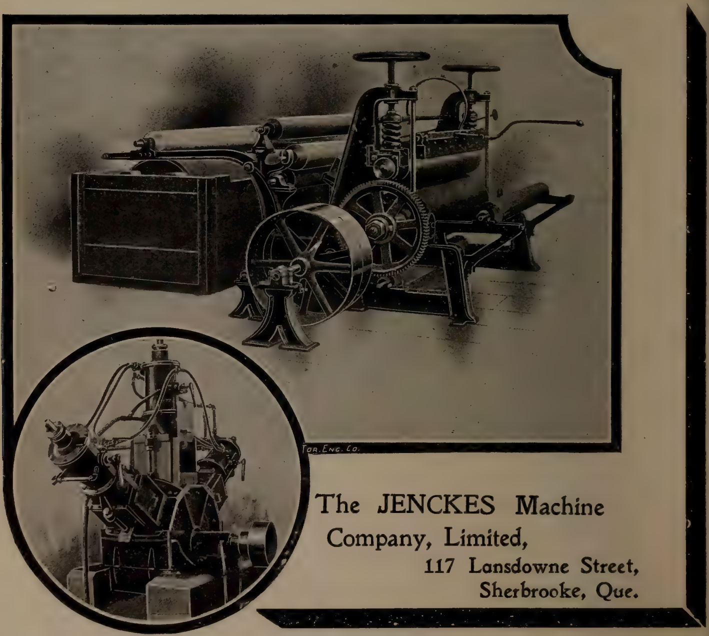

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OF CANADA

VOL. 3.—NO. 3. TORONTO, MARCH, 1905. {$1 A YEAR. SINGLE COPY 10c.

Pulp and Paper Magazine

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The direct bearing of scientific forestry and forestry legislation upon the pulp and paper industry will justify us in taking up the greater part of this issue with the proceedings of the Canadian Forestry Association at Quebec. One cannot read such papers as those of Mr. Langelier and Col. Loggie without realizing the transcendent value of our forests, not only in relation to the paper industry, but to every other branch of trade in the country; nor can the statistics there given be digested without a stronger conviction of the importance of all legislation that affects the future of national assets so vital as the forests are to Canada. We take it that the invitation extended by Sir Wilfrid Laurier to the Association to hold a special convention at Ottawa this summer is an indication that the Dominion Government has now begun to realize that some mistakes have been made in the past in dealing with forestry, timber and kindred interests, and that better methods of conservation of these great interests are called for if we are not to kill the goose that lays our golden eggs.

❧

It is well known to those behind the scenes in the politics of Quebec, that the political crisis that has just ended in the resignation of Premier Parent, developed primarily out of the timber policy pursued by that gentleman as Minister of Crown Lands, his treatment of the pulp interests being the kernel of dissatisfaction with the Premier's administration of his department. Now that Mr. Parent has resigned, and that, too, in ill health, it would be ungracious to add anything to the strictures that have been made in this magazine on this subject, further than to say that this dissatisfaction with Premier Parent's Crown Lands administration has not been confined to one party or to one class of commercial interests in the province. It was felt by the mass of those having the welfare of the Province at heart that, whatever his motive, Mr. Parent's policy did not tend to the proper development of the pulp and paper trades of the

Province, which, by the claims of nature, should stand first. It was, moreover, felt that he had done practically little to reform the outside service in the Crown Lands Department, which his own commission had shown to be in a rotten condition. We believe that the Hon. Mr. Turgeon, the new Minister of Crown Lands, is a thoughtful man with statesmanlike views, and a man above the suspicion of seeking personal ends; and we hope and believe that he will regard the control of the greatest assets of the Province as a trust to be administered, not by time-serving, but that it may be handed down unimpaired to the future citizens of Quebec.

◆

In another column will be found a copy of a petition which Mr. Dubuc, general manager of the Chicoutimi Pulp Co., has interested himself in getting up in favor of reducing the stumpage on pulp-wood exported to the States. Mr. Dubuc, who on his recent visit to England, made sarcastic references to the tricky Yankees, with whom he wanted nothing to do, now walks arm-in-arm with officials of the International Paper Co., and sees in the United States the "natural market" for pulp and pulp-wood. Mr. Dubuc tried to get the Paper Manufacturers' Association to adopt a resolution on the lines of his petition, at their recent meeting in Montreal, but did not succeed. His success since then in inducing some individual firms to sign his petition is a testimony of his pertinacity and persuasive eloquence, but few of those who signed will be misled by his specious arguments. Surely none by his statistics. The pulp manufacturers of Quebec will consider that the "natural market" for pulp is any country in the wide world that will buy it. Mr. Dubuc joins the contingent of those gentlemen south of the boundary line who seem to imagine that the Province of Quebec is chiefly inhabited by pulp-wood dealers, and that the people of the Province have no purpose so dear in life as to clear their land of spruce trees. The talk and conduct of some people in the Province might indeed give color to this suspicion, but we should not think that events will long justify this notion. Mr. Dubuc's method of reversing the telescope, when dealing with figures, is amusing, as, for example, when he says that out of 350,000 cords of wood exported in "two years," only 60,000 cords "per annum" come off Crown lands. His quotation of official returns, as representing the actual facts, may pass with outsiders, but not with those who know the methods of reporting stumpage and exports of pulp-wood in Quebec. We have been at pains to get some facts on the shipments of pulp-wood to the United States, and we find that the railways alone have shipped out over 500,000 cords to the States in the past year, and that making a fair allowance for the wood that goes out by water, along the Ottawa and St. Lawrence and by Lake Champlain, the total is not far short of 1,000,000 cords, instead of the 600,000 or 650,000 cords commonly estimated. As another example of reversing the telescope, Mr. Dubuc says 28,000 tons were subjected to the countervailing duty going into the States, on which the Americans paid $10,000. The returns show 20,000 tons in the one case and $15,000 in the other. But supposing the figures he quotes were correct, is Mr. Dubuc justified in his conclusion that it would be in the best interests of the "railways, the transportation companies, the farmer and the settler" of Quebec to export, under any conditions of tariff or countervailing duties, the pulp-wood of the

Province instead of manufacturing it at home? If the pulp-wood now exported from Quebec were manufactured into paper, instead of being shipped as raw material, it would mean the investment of twenty or thirty millions for mills, and the payment in wages alone of over twenty million dollars, besides sparing a good many thousands of cords of wood to United States mills who wanted it. Which would be better for the "railways, the transportation companies, the farmer and the settler," the circulation of this amount of capital at home, and the creation of the cities and towns, that would naturally arise from such a development, or the shipment of cordwood? However, we can quite agree with Mr. Dubuc as to the futility of the present Crown land regulations for effecting anything for either the Canadian pulp manufacturer of the shipper of pulp-wood so far as United States trade is concerned, and the signatures of some of those whose names appear on the petition can easily be accounted for on this ground.

⁂

The Paper Trade Journal has an article on the Canadian pulp-wood question, in which it attributes the recent resolution of the Canadian Paper Manufacturers' Association asking for prohibition of the export of pulp-wood to a feeling of resentment against the American Paper and Pulp Association for passing a resolution asking that no change be made in the United States tariff. We can assure our contemporary that this is a mistaken notion. It is true, as the Paper Trade Journal says, that Canadians have in the past desired reciprocity with the United States, and have been unable to obtain it on even terms, and it is also true that Canada buys more from the United States than the United States does from Canada, especially in manufactured goods. But while this may show that Uncle Sam wants the big end of the stick, as usual, it does not follow that Canada harbors a feeling of revenge, just because poor Uncle Sam is injuring himself by his own greed. The gormand may ruin his digestion by cramming himself, but the wise friend will pity him rather than envy him the good things he has abused by his devouring appetite. And this special problem is more than a question of pulp-wood. It is a question of forest conservation, not only because the forest is one of our greatest assets in itself, but because through the relation of forestry to rainfall and water distribution, it vitally affects our agriculture and the permanency of our vast water-powers, which are becoming more important with each new development of electrical science. For the sake of the profits which the present generation may get out of this industry we do not want to make Canada a second Mesopotamia.

⁂

At the dinner of the Canadian Forestry Association Monsignor Laflamme, Dean of the Faculty of Arts of Laval, intimated that that university would be prepared to establish a forestry department the moment the Government and people provide the means. Mgr. Laflamme sees with the clearest vision the relation of a sound forestry policy to the future of Quebec, and when a man of his calibre takes up the question it will not be long before the people will realize the situation. Here is a chance for some patriotic Canadian to do for technical education among the French Canadians what Sir William Macdonald has for the English-speaking Canadians.

With their inborn aptitude for woodcraft, the French Canadians ought to lead the world in scientific forestry.

* * *

QUEBEC TIMBER LIMIT HOLDERS' ASSOCIATION.

The annual meeting of the Quebec Timber Limit Holders' Association was held at the Chateau Frontenac, Quebec, on the 9th inst. F. P. Buck, vice-president, in the absence of the president, Senator Edwards, occupied the chair.

The following timber and lumber firms were represented: Arthabaska W. and P. Co., Henry Atkinson, Bennett & Co., Chaleur Bay Mills, Chicoutimi P. Co., H. Calvin, Est. Frank Dudly, W. C. Edwards Co., F. F. Farmer, D. Fraser & Son, Fenderson & Co., Goodday & Co., Gillies Bros. & Co., Great Northern L. Co., Jonquiere Pulp Co., Laurentide Paper Co., Lake Megantic P. Co., Price Bros. & Co., Limited, J. Richardson & Co., Wm. Power, River Ouelle P. and L. Co., Riordon Paper Co., Royal Paper Mills Co., Saguenay L. Co., St. Maurice L. Co., Tourville L. Co., Union Bag and Paper Co., Pentecost P. Co., and the Masson-Boyd Co., of Bobcaygeon, Ont.

The annual report and financial statements were adopted. The election of officers resulted as follows:

President—Hon. W. E. Edwards.

Vice-Presidents—F. P. Buck and W. Price.

Executive Committee—Rod. Tourville (ex-Pres.) Alex. McLaurin, Wm. Power, M.P.; H. W. Durant, Archibald Fraser, J. W. Branckley, F. F. Farmer, E. A. Dubuc, John Champoux, H. K. Egan, G. Starnes.

Sec.-Treasurer—Paul G. Owen, Quebec.

The meeting closed with a vote of thanks to the officers for the past year, and to Mr. Buck, for acting as chairman.

The Association has offered, on behalf of its members, to pay to the Provincial Government the cost of fire protection in the unorganized districts, if the Government will abolish the fire tax. This tax in some districts is 10½ cents per sq. mile, and in others 17½ cents per sq. mile. The unorganized regions are north of the St. Maurice district and east to Labrador.

* * *

E. G. Joly de Lotbiniere.

E. G. Joly de Lotbiniere, president of the Canadian Forestry Association for 1905, is a son of Sir Henri Joly de Lotbiniere, the heir of the large seigneury of Lotbiniere, near Quebec city. Mr. Joly has inherited an interest in forestry from his father, who was not only one of the fathers of the American Forestry Association, but one of the first men in Quebec to introduce foreign trees and replant treeless lands in the settled parts of the Province. Mr. Joly is manager of the large family estate and timber limits in the county of Lotbiniere, and has been one of the most earnest and enthusiastic workers in the Canadian Forestry Association since its formation.

W. C. J. Hall.

W. C. J. Hall, Chief Clerk of Forestry and Superintendent of Laurentides Park, Department of Crown Lands, Quebec, one of the Entertainment Committee, Forestry Convention.

* * *

HAND-MADE VERSUS MACHINE-MADE PAPER.

In his interesting "Commentarium," "G. A. F." recently devoted a couple of paragraphs to the subject of distinguishing between hand-made and machine-made papers. He quoted the following: "Cut out pieces (says my authority) in a circular shape about three or four inches in diameter, and place them in a basin of water so that they will float on the surface. The machine-made paper will be found to curl upon two sides towards the middle, whereas in the hand-made paper the edge will turn up all round like the raised edge of a plate."

If the skill of the hand-made paper-maker could bring about an interweaving of the same number of fibres at the same angles either way of the sheet the "curling test" would no doubt prove sufficient; but there is invariably a difference in the "felting" of hand-made papers, and none that the writer has examined have behaved dissimilarly to machine-made in the matter of circular pieces curling when damped. As a rule the edges do not turn up quite so quickly, and this points to the probability of a sample being hand-made.

Confirmation can be obtained by determining the breaking strength of the two ways of the paper. The maximum difference in a hand-made paper is that one way is 25 per cent. weaker than the other, and the minimum difference in a machine-made paper is that the cross direction is 30 per cent. weaker than the machine direction. As an instance: Strips of hand-made sustain breaking loads of 6 lbs. one way and 8 lbs. the other. A machine-made paper, 6 lbs. cross and 9½ lbs. machine direction. The experienced Kent vatman would probably judge between the two papers by the "tears," but a ready method simple to all has yet to be devised.—"Jay," in World's Paper Trade Review.

* * *

Monsignor Laflamme.

Monsignore Laflamme, Dean of the faculty of arts of Laval University, was born in 1849 at St. Anselme, Que. He was educated at the Seminary of Quebec, was ordained priest in 1872, and became a doctor of laws in 1873. From 1870 till his recent promotion he occupied the chair of natural history at Laval. He is an expert botanist and geologist, and was appointed by the Quebec Government its delegate to the International Geological Congress at Washington in 1891, and later at the same congress held in Russia. Mgr. Laflamme is a member of many learned societies, and takes a warm interest in forestry among other subjects. He has himself written some excellent articles for the periodical press, and is fully alive to the supreme importance of conservation of forests in the special circumstances of the Province of Quebec. It is safe to predict that his appreciation of the subject will soon lead to the creation of a department of forestry for Laval.

* * *

QUEBEC PULP-WOOD REGULATIONS.

As changes are pending at the present time in the Crown Lands Department of Quebec, it may be of interest to re-state briefly the history of the stumpage regulations of the Province. In recent years up to 1894 the stumpage charged on Crown lands was 25 cents per cord. In August, 1894, an order-in-council was passed raising the stumpage dues to 40 cents per cord, with a reduction of 15 cents a cord where the wood was manufactured into pulp within the Province. In October of the same year the reduction clause was struck out, leaving the rate at 40 cents per cord all round. Thus it remained till January, 1900, when the stumpage was raised to $1.90 a cord, but a rebate of $1.50 a cord was allowed when the wood was made into pulp within the Province. In June, 1901, the stumpage was reduced to 65 cents a cord, with a rebate of 25 cents a cord if the wood was manufactured into pulp in Canada. It will be noted that under the last regulation the manufacture within the Province was not insisted on. It was a subject of much complaint that this last order-in-council, still in force, was passed only the day before a large sale of Crown lands was held, when only those who happened to know the new conditions could take advantage of the change.

* * *

The "Journal," the French Conservative morning paper of Montreal, printed its final issue on March 7th.

* * *

Wilson, Paterson & Co., of Montreal, the old and reputable firm of dealers in chemicals, will turn their business into a joint stock company under the name of the Wilson-Paterson Company. The applicants for the charter are: John T. Wilson, William S. Paterson, John H. Wilson, Alfred W. Gifford, Arthur L. Paterson, and Leslie H. Boyd, all of Montreal.

Aubrey White, Retiring President Canadian Forestry Association.

Forest Wealth of the Province of Quebec.

A Paper Read Before the Canadian Forestry Association, by J. C. Langelier, Chief of Forest Rangers, Quebec.

The census of 1901 shows that the nd superficies of the Province of uebec comprises 218,723,687 acres. At ie date of that census 7,421,264 acres ere under crops, in pasture, gardens nd orchards, while bushes, rocks and iarshes, or other untimbered spaces, ccupied 1,560,960 acres, leaving for the rest an area of 209,741,463 acres, or 27,721 square miles.

Under the heading of "Forests," the ensus mentions only 5,442,204 acres. his number represents only the forest rea comprised within the 14,424,428 cres of lands occupied in all the Pro-ince, and does not apply to forests ituated outside of private lands, or lands eld under title grants.

Conifers predominate throughout iose forests; spruce, fir, pine, cedar nd hemlock, enumerating them by rder of predominance, form at least 5 per cent of the timber growth. Ex-epting white birch (bouleau) and tam-rac, which grow as far as the northern oundary of the Province, deciduous ees, or "hard woods," do not grow eyond the 48th parallel of latitude. he only exceptions noticed so far are few places in the Saguenay district nd in the southern section of the Abitibi rritory, where some yellow birch and lack ash trees have been seen north f that latitude.

For the purpose of classifying them ccording to the prevailing growths, the rests of the Province of Quebec may e divided into three very distinct egions:

1. The Northern Region.
2. The Central Region.
3. The Southern Region.

Let us examine each of these sepa-ately.

1. The Northern Region.

This is by far the largest of the three. t embraces all that portion of the Province lying north of the St. Lawrence and of the 48th parallel from the intersection of this line by the river, a short distance west of the river Saguenay. The forests comprised within those limits cover an area of 162,749,788 acres, forming 77.58 per cent. of the whole forest area of the Province. This northern region embraces the territories of Abitibi, Mistassini, Ashuanipi, the counties of Chicoutimi-Saguenay and the north-west section of the counties of Champlain, St. Maurice, Maskinonge, Berthier, Joliette and Montcalm, a superficies of 5,375,000 acres.

Black spruce (Picea nigra) is the prevailing and characteristic growth of that region. It represents about 60 per cent. of the conifers of commercial value. On the average, taking into consideration the "burnt spaces," the windfalls and the sections denuded by other causes, black spruce would certainly yield 2½ cords of pulp-wood to the acre, equivalent to 1,500 feet board measure. At this rate, which is rather below than above the mark, the forests of the Northern Region could supply 406,874,470 cords of pulp-wood, or 244,124,632,000 feet board measure of lumber.

Those quantities, of course, include only the trees measuring seven inches in diameter on the stump, as the rules of the Department of Crown Lands do not allow the cutting of trees of a less diameter.

It takes less than thirty trees of six inches in diameter and sixteen feet in length of utilizable timber to form a cord of 128 cubic feet. Mostly everywhere those black spruce forests are very thick; in the most favorable places the trees grow tall, close to one another, so much so, in fact, that 500, 600 and 700 trees are often found in one acre of ground, which represents from ten to twenty cords of pulp-wood per acre.

It may be added that throughout this region, where the land is higher and the soil deeper, there are many black spruce trees measuring ten to twelve inches across the stump, which materially increases the yield per acre.

As regards the number of trees, fir (Abies balsamea) is nearly as abundant as black spruce, but the trees are not so tall, and their yield in utilizable wood probably does not exceed 25 per cent. of that of black spruce. For the whole of the Northern Region this proportion represents 101,718,617 cords, equivalent to 61,031,170,000 feet board measure.

The white spruce (Picea alba) yields a much larger quantity of lumber, and 75,000,000,000 feet is certainly not an exaggerated estimate of the saw-logs which can be cut in this region, taking only the trees measuring eleven inches in diameter on the stump. Then there would still be left in the tops utilizable wood to make millions of cords of pulpwood.

In the southern section of the Abitibi territory, or over an area covering 15,000,000 acres, white spruce attains dimensions which make it equal to the finest timber of that kind to be found in the Central and Southern Regions. In the course of his explorations Mr. Henry O'Sullivan has seen trees measuring one hundred feet in length and twenty inches in diameter. "White spruce," says Dr. Bell, "is, perhaps, the most valuable tree of the district explored. It grows to a great size everywhere along the rivers and lakes, and, although, as a rule, it may be larger near their banks, where it often girths upwards of six feet, a considerable portion of the trees inland also attains a good size." This timber is sound; as a rule the trunks run to a great height without branches, and in every respect this white spruce ranks amongst the very best timber for the manufacture of first-class saw-logs. In this section of the Abitibi territory there is enough of that fine white spruce to make about 20,000,000,000 feet of saw-logs of superior quality.

Banksian pine (Pinus bankisiana) is another kind of timber which grows in abundance throughout that Northern Region. It is chiefly used for making railway ties. Calculating at the low rate of only two ties per acre, on the average, there is enough of that kind of timber to make upwards of 320,000,000 ties, or sufficient to make ties for 150,000 miles of railway.

Botanists describe Banksian pine as a stunted, short and branchy tree. This description certainly applies not to the Banksian pine of the Lake St. John and Saguenay district, where these trees grow to a considerable height, and attain a diameter which renders them fit for the manufacture of saw-logs. In a shanty on the river Au Rat, in 1898, a jobber cut a tree of this kind which gave ninety-one feet in length of utilizable timber, viz., five saw-logs and two ties. That tree measured fifteen inches across the stump and over seven inches at the top. In the "burnt grounds" and wind-falls in the townships of Albanil and Pelletier, also in those of Dolblau and Tallon, one can count by scores of thousands Banksian pine trees measuring from forty to fifty feet in length and seven to eight inches in diameter at the small end. The wharf at Tikouape, or St. Methode, is mostly all built of Banksian pine, fifteen to twenty feet long and eight to twelve inches square. At the Escoumains mills they sawed for many years Banksian pine logs, turning out good boards, which were exported to the United States. Logs of this timber are still sawed by the mills of Lake St. John. Banksian pine ties are from year to year coming to the front, and looked after to such a point that they can be transported by railway to Quebec, a distance of 190 miles, and sold at prices leaving a good margin for profit. When there will be no more cedar to supply the enormous quantities of ties required yearly by railways, one of its most valuable substitutes will unquestionably be found in that Banksian pine, which the Northern Region is in a position to supply for a very long period.

The fine pineries of the Lake St. John country have been depleted by the Chicoutimi mills; but in other parts of the Northern Region there yet remains a good deal of this timber. The census of 1901 shows that during that year there were cut in the county of Chicoutimi and Saguenay 54,182 cubic feet of pine and 1,217,000 feet board measure of saw-logs of the same timber.

But it is in the Abitibi territory, from the height of land northwards to a distance of about fifty miles, that pine is found more abundantly. This area embraces about 6,500,000 acres, which, at the minimum rate of fifty feet board measure to the acre, would yield 325,000,000 feet. This pine is scattered over all the higher lands and hills, and could be cut profitably only in connection and simultaneously with spruce; but nevertheless it is there, and in the high and rocky grounds surrounding many parts of the lakes it could supply material for pretty extensive operations.

Cedar (Thuya occidentalis) is another kind of timber which grows more or less abundantly in the southern section of the Northern Region. As is the case for pine, it is in the Abitibi territory that it grows more profusely. The best is found around the lakes and along the river banks. The south-west section of the Abitibi territory alone could supply sufficient of that timber to cut at least twenty millions of ties, a couple million cubic feet of square timber, eight to twelve inches square, large quantities of piles, telegraph and telephone poles, pickets and fence rails.

Of deciduous trees, white birch (Betula papyrifera) is by far the most abundant all over the Northern Region. It is seen everywhere, and in many places it occupies the ground almost exclusively. Till now, this birch has been used only for fuel and for making spools and some turnery articles; but the time is, perhaps, not far distant when it will be used for furniture, and also for cooperage, to make barrels and kindred articles. In the virgin forest, where white birch is a primitive growth, many trees are seen girthing ninety inches and more (see report of the Commissioner of Crown Lands for 1898, p. 92, French version), particularly in the lower part of the rivers Alex and Peribonka, where immense quantities of those large trees grow on the mountain sides and on the higher lands. That big birch also grows in many places along the north shore of the Saguenay river. Below this river, the forests of Cape St. Nicholas, on the St. Lawrence, are the best situated for the cutting of white birch to get lumber for furniture. The harbor of St. Nicholas affords all the desirable accommodation for crafts of the largest tonnage, and the forest of large birch which surrounds it could supply in comparatively exhaustless quantities big logs of the best description. That fine, large birch is also found in the southern section of the Abitibi territory. Along the Bell, or upper part of the Nottaway river there is enough of that fine big birch to cut millions of saw-logs. When this territory is made accessible by the construction of railways, this timber will in all probability afford material for large operations.

Poplar (Populus balsamifera) and aspen (Populus tremulcides) constitute another growth which is also very abundant throughout the forests of the Northern Region. There are remarkable groves of large aspen between the rivers Au Rat and Mistassibi, in the county of Lake St. John. Many of these trees attain a diameter of twenty-four inches, but the general average is between fifteen and eighteen inches. This timber is sound, remarkably free from black veins and knots, and would yield lumber of the best quality. However, the finest timber of this kind grows in the Abitibi territory, where it attains a diameter of thirty inches and a length of fifty and sixty feet without branches or knots. In the forests of that district there is enough of this big timber to cut about ten billions of feet, board measure, which might be used for making furniture and packing cases. It might also be used to great advantage in the manufacture of soda pulp. There is no other place where this industry could get its raw material as easily and so cheaply were these forests made accessible by the construction of a railway running along the Bell river as far north as Lake Mattagami, a distance of about 150 miles from the height of land. Taking only a strip of five miles on each side of the river, it would be an easy job to cut from twenty-five to thirty millions of cords of that fine big poplar.

Tamarac or larch (Larix americana) is, perhaps, more abundant than poplar. The oldest trees have been destroyed by the grub of the larch saw-fly (Nematus Ericksonii), which has spread devastation all over the Northern Region. Still, the dried trees, which are not attacked by rot, could probably be used for several purposes, such as to make railway ties. In the Abitibi district there is enough of those dried trees to make millions of ties. At all events, the young trees, a great portion of which were spared by the sinister insect, continued growing, and ere many years will supply a large contigency of the forest industry.

The following is a very conservative estimate of the products which the forests of the Northern Region could supply to the timber business:

Saw-logs.

	Feet B.M.
Pine, white and red......	325,000,000
Banksian pine	10,000,000,000
Spruce	35,000,000,000
Poplar	10,000,000,000
White birch (bouleau)...	10,000,000,000
	65,325,000,000

Pulp Wood.

	Cords.
Black spruce	406,874,470
White spruce	15,000,000
Fir	101,118,607
Poplar	100,000,000
	622,993,377

Railway Ties.

	Pieces.
Banksian pine	320,000,000
Cedar	50,000,000
	370,000,000

Besides and over that, fir would also supply several billions feet of lumber for domestic uses when the country is settled, viz., in the Abitibi territory.

Explorers have ascertained that yellow birch (Betula excelsa) grows as far north as fifty miles back of Betsiamties, and as far back of Lake St. John, where they have measured trees of twenty-four inches in diameter. This tree also grows in the southern section of the Abitibi territory: also black ash (Fraxinus sambuciplia) and elm (Ulmus americana), but those trees are not in a quantity sufficient to make them of commercial value; they will be used for domestic purposes when the country is settled.

2. Central Region.

With regard to the variety and quality of the forest growth, this region is unquestionably the richest of the three. The forest covers an area of 31,649,682 acres, or 302,745 more than the whole territory of Nova Scotia and New Brunswick, whose collective superficies is only 31,346,937 acres. This Central Region is bounded to the south by the river St. Lawrence, and to the north by the 48th parallel, except in the upper part of the counties of Champlain, St. Maurice, Maskinongé, Berthier, Joliette and Montcalm, where the line bends southward in order to throw into the Northern Region about 3,373,000 acres of forest, in which spruce, particularly black spruce, predominates.

All kinds of commercial timber growing in the Province of Quebec are found in this Central Region. The conifers include white pine (Pinus strobus), red pine (Pinus resinosa), Banksian pine, white spruce, black spruce, balsam, fir (Abies balsamea), double balsam-fir (Abies americana), hemlock (Tsuga canadensis), and cedar. In deciduous rees, or hard woods, we have yellow irch (Betula excelsa), black birch (Betula lenta), white or silver maple (Acer dasycarpum), rock or sugar maple (Acer saccharinum), mountain maple (Acer spicatum), red or soft maple (Acer rubrum), white oak (Quercus albus), blue or swamp oak (Quercus rinus), red oak (Quercus rubra), ickory (Carya amara), butternut (Juglans cinerea), white ash (Fraxinus mericana), black ash, white elm (Ulmus mericana), red or slippery elm (Ulmus elva), beech (Fagus sylvatica), basswood (Tilia americana), hornbeam (Carpinus americana), iron wood (Ostrya virginica), all the poplars and white or canoe birch.

White pine ranks first in the forests of this region, especially in the western part. Between the Saguenay and the river St. Maurice this timber is thinly scattered amongst the other trees of the forest, of which it constitutes only a minute proportion. In those 5,004,180 acres of forest it is probable that twenty-five to thirty million feet of white pine could be cut, of medium quality for the most part. It is more abundant in the western section of the St. Maurice territory, whch contains at least 150,000,000 feet. There is undoubtedly as much on the Rouge, Lievre and Petit-Nation rivers. The richest pineries, and by far the most abundant, are situated in the counties of Wright and Pontiac. They cover an area of 14,596,690 acres. On an average, they can yield 2,000 feet B.M. per acre, which would make a total of thirty billion feet. In those rich pineries there can be counted by the score the localities where 10,000 feet and more could be cut upon one acre of land.

Red pine is one of the trees characteristic of this Central Region. This timber grows on the sandy and gravelly hills, which are numerous all over that district, it forms thick groves on the hill-sides where gravelly soil has accumulated, and on the dry, sandy points jutting forth into the lakes. There is a sufficient quantity of this timber to supply seven or eight billion feet B.M.

Banksian pine grows nearly everywhere on the poor, rocky and gravelly lands, chiefly in the dry plains which have been formerly laid waste by fire. It is not as tall nor as good as the same kind of timber growing in the Northern Region, especially that of the Lake St. John valley, but nearly everywhere it is of a size large enough to make railway ties. It is larger and of better quality towards the north. 150,000,000 ties could probably be made out of this Banksian pine.

In the eastern part of this Central Region white spruce, as far as the number of trees is concerned, is the prevailing growth, particularly in the St. Maurice territory. It is less abundant in the Ottawa territory, but, as a rule, of better quality and larger dimensions. In the Central Region, and only from the first cut, there is enough of white spruce to manufacture sixty billion feet of saw-logs, taking only the logs measuring eight inches in diameter and up at the small end. The tops of the same trees could yield upwards of fifteen million cords of pulp wood.

There is as much, if not more, of black spruce capable of being used for pulp-wood, and the quantity of this wood which can be cut in all this region is over twenty million cords. The largest trees, which grow in comparatively large numbers in the more favorable situations, could be used to make masts and spars, frame timber and railway ties.

Fir is very common all over the damp grounds. Taking into consideration the fact that these trees are generally affected with rot, their yield may be estimated at five hundred million feet for saw-logs and 2,500,000 cords of pulp-wood.

Hemlock scarcely grows beyond the 47th parallel of latitude. Hardly any groves can be seen north of this latitude in the neighborhood of Cape Tourmont. In the western section, it grows as far north as the river Kippawa. Between these two extreme points, the line marking the northern limit bends southward, describing a curve which passes south of the river Mattawan, in the St. Maurice territory. This tree, which rarely grows in groves, such as were formerly seen in the forests of the Southern Region, is generally large and tall. This timber could yield a couple hundred million feet of lumber, or the equivalent in square timber. It could also produce, say, two hundred thousand cords of tan bark. Unfortunately it floats only with difficulty, in the cold and heavier waters of the spring, so that it can be utilized by trade only at those places where the drive is not long or where the logs can be transported by railway.

Cedar grows throughout the whole of the central region. It is disseminated mostly everywhere in the forest; but on the lake shores and river banks, it forms in many places almost impenetrable thickets. It also grows on the marshy depressions and damp flats between the hills and mountains, and it covers almost exclusively large areas of swampy lands. In the dense thickets, many of these trees are small and stunted, but numberless quantities could make ties, telegraph poles and even square timber for railroad culverts. The largest trees are almost invariably hollow at the stump; but these hollow butts are very profitably used in the manufacture of shingles. Fence rails and pickets are made out of the smaller trees. Calculating on the very conservative estimate of two ties per acre, on an average, there is enough cedar in the central region to make upwards of sixty million railroad ties. Poles for electric wires would certainly reach about ten million, and the hollow butts would supply material to manufacture many hundred millions of shingles. Add to this several million feet of square timber for frames and culverts, myriads of pickets and fence rails, and you will have an idea of what the cedar growing in the central region can contribute to forest industry.

Hard woods are scattered mostly all over this region, but in a much smaller quantity than conifers. Deciduous trees constitute about 25 per cent. of the timber fit for commercial purposes, outside of the lands occupied for colonization purposes.

Birch is the most numerous growth in the family of hard woods. And in this species, it is yellow birch (Betula exelsa) which prevails. Generally speaking, the finest timber of this kind is found in the St. Maurice and Ottawa territories. Black birch (Betula lenta), is less abundant, but generally of large size. In the Ottawa territory it attains a diameter of thirty inches. Calculating upon the low basis of 100 ft. to the acre, and taking only the trees measuring only twelve inches on the stump, there is in this region birch enough to cut at least 300,000,000 feet B.M. of good sound lumber.

White or canoe birch of a size to make spool wood and saw-logs would yield 150,000,000 feet or 250,000 cords. This would be the yield of the primitive growth exclusively. The second growth, which occupies so large a portion of the lands devastated by fire, will ere long supply a much larger yield, and besides a practically unexhaustible supply of fuel.

Of the maples, the hard or sugar variety is the most abundant. It is also the variety which generally attains the largest size. Practically speaking, white or silver maple is not to be found in this region. Red or soft maple is seen mostly everywhere in swamps and low lands. These two kinds of maple could yield as much timber and lumber as yellow and black birch, and also enormous quantities of fuel for home use and for distillation in the manufacture of pyroligneous products.

Basswood scarcely grows in appreciable quantity east of the river Rouge. It is generally distributed amongst yellow and black birch and hard maple, viz., in rich soils. Many of these basswood trees measure twenty-four inches in diameter. Very often two or three trunks are seen shooting from one stump, and in this case the diameter is smaller. As regards height, it is about uniform for adult trees, which are invariably tall, usually forty to fifty feet without branches. The yield of this kind of timber in the central region should exceeed 100,000,000 ft. B.M.

The family of poplars is represented in

the forests of this region by three varieties: the balsam poplar, the trembling-eaved poplar, and the cotton tree or cotton wood. In the primitive forest and in he very old "brulés," those trees attain a considerable size and can give good saw-logs. Cotton wood, which grows only in good soil and on the river flats, is always large. Were this timber floatable, the forests of the central region could supply millions of logs to the lumber industry and about fifty million cords to the pulp and paper industry.

Larch grows in low, swampy lands, alongside of cedar, black spruce and black ash. It was a tree of great size and great value, but has been destroyed by the grub of the larch fly and has no longer any commercial value. But even in its present condition it can supply an abundance of good fire-wood.

White and black ash increase in quantity and size, as they grow further towards the western limit of the province. On the rich flats of the rivers Lievre and Gatineau and their tributaries, scores of white ash trees may be seen measuring fifteen to twenty inches in diameter and from forty to fifty feet of trunk, without branches. This timber grows in all parts of the Ottawa territory, even beyond the latitude of Lake Des Quinze. Black ash is also observed in all parts of that territory; the trees are as high as those of the other variety, but of smaller diameter and more abundant in number. This tree grows in swamps and wet lands. At least 125,000,000 ft. of both varieties could be cut in the Central Region.

White elm almost invariably accompanies ash, but grows also in many places where the latter is not found. This timber, as a rule, consists of fine big and tall trees, which dominate the surrounding forests. In the rich soil of the river flats, white elm grows with so great a vigor as to support on the same stump several large trees. Upwards of 200,000,000 feet of this timber could be cut in the central region, and if the upper part of the Lievre, Gatineau and Ottawa rivers is ever made accessible by railway, the manufacturers of furniture and flour barrels will obtain therefrom a very considerable supply of raw material.

In the oak family, the red variety prevails, and would yield the largest quantity of merchantable timber. There are considerable groves of those trees in the Ottawa forests. Blue or swamp oak grows in many places in the valley of the Lievre river, where hardly any red oak is seen. The several varieties of oak are found in appreciable quantity throughout the Ottawa territory, and could contribute perhaps ten million feet to the resources of the lumber trade.

Butternut is found in nearly all parts of the forests east of the river Rouge and south of the latitude of Lake Keepawa. There is enough of this timber, of merchantable dimensions, to cut 5,000,000 feet for the manufacture of furniture.

Beech is rather common in the forests of the central region from Quebec to the River Ottawa. Some very fine specimens of this tree may be obtained in the counties of Argenteuil, Labelle, Wright and in the lower part of Pontiac. This timber could produce over 15,000,000 feet of fine boards for making furniture and wainscoting, and as many railroad ties for exportation to France, where these ties are in great demand.

A recapitulation of the details given for each of the several kinds of timber standing in the central region gives the following totals:

Soft Woods.	Saw Logs. Ft. B.M.
White pine	30,325,000,000
Red pine	7,500,000,000
White spruce	60,000,000,000
Hemlock	200,000,000
	98,025,000,000

Hard Woods.	Saw Logs. Ft. B.M.
Birch, yellow and black	300,000,000
Maple	300,000,000
Oak	10,000,000
Elm	200,000,000
Ash	125,000,000
Beech	15,000,000
Butternut	5,000,000

Basswood	100,000,000
White birch (Bouleau)	150,000,000
Poplar	250,000,000
	1,455,000,000

Pulp-wood.	Cords.
White spruce (from tops)	15,000,000
Black spruce	20,000,000
Fir	2,500,000
Poplar	50,000,000
	37,500,000

Railway Ties.	Pieces.
Banksian pine	150,000,000
Cedar	60,000,000
Beech	15,000,000
	225,000,000

Poles for Electric Wires.	Pieces.
Cedar	10,000,000

Shingles.	Shingles.
Bolts from hollow butts	8,000,000,000

Culvert Timber.	Cub. Ft.
Cedar	5,000,000

Add to all that myriads of pickets and rails for fences, inexhaustible supplies of fire wood, and you will have an idea of the wealth and variety of the forests of this Central Region.

3. Southern Region.

It is the less extensive of the three, as it embraces an area of only 15,381,390 acres, or 7.34 per cent. of the total forest area of the Province. And more than 25 per cent. of these 15,381,890 acres are included in grants for colonization purposes. To state the facts as they are, it must be said that genuine forests exist only east of the Chaudiere river, and that portion comprised between Chaudiere and Lake Temiscouata will be exhausted within a few years, in so far as regards the production of saw-logs.

In this Southern Region cedar is the most valuable timber. It is the finest cedar to be found in the Province, even in Canada, excepting the cedar of British Columbia. It attains colossal dimensions in the rich lands of the Silurian and Devonian formations of the Gaspé peninsula, where timber explorers have found trees measuring five feet in diameter on the stump and upwards of fifty feet of clean trunk, without branches. In those rich soils, cedar grows in such an abundance that it is hardly credible to one who has not seen it. In the evidence he gave under oath before the Colonization Commission, forest ranger Aquilas Lajoie, stated that out of about two acres' square of land, in the Township of Hamilton, Mr. Robert Sinclair did cut two thousand cedar logs, besides some spruce logs, the average contents of the logs being one hundred feet each. Many of those cedar logs, fourteen to fifteen feet in length, measured 45 to 48 inches in diameter on the stump and 30 to 33 inches at the small end. Mr. Sinclair also cut at the same place 340 pieces of square cedar 10 by 10 and 12 by 12 inches, 10 to 15 feet in length and 600 railway ties. These facts can be easily verified by looking at the stumps, which are there yet, near the front line of lot 10 in range 13 of Hamilton. On lot 5, in range 11 of the same township, the following cut was made during the same season 1902-03, viz., two years ago, 25,000 cedar and spruce logs; 12,000 logs of yellow and black birch, also of large white birch (bouleau), all the logs containing an average of one hundred feet each, and six thousand cedar ties. On the next lot, No. 4, the cut gave 20,000 cedar and spruce logs, 12,000 birch logs, and 4,000 cedar ties. The logs averaged 100 feet each.

The Township of Humqui, in the Metapedia Valley, is about 120 miles west of Hamilton, on the Bonaventure river. On five lots in Humqui, lots 17, 18, 19, 20, 21, in the 8th range, Mr. Jos. Théberge, a man of long experience, swore that the cut of timber would produce 55,000 cedar and spruce logs, averaging 50 feet each and forming a total of 2,750,000 feet for 500 acres of land, or an average of 5,500 feet to the acre, leaving aside ties and pulp-wood.

The Temiscouata district is just as rich. The scalers of the Department of Crown Lands measured in this district spruce logs 13 feet long and 37 inches in diameter at the small end. The same quality of spruce grows in the counties of Beauce and Compton.

The standing timber of this southern region can supply the following quantities to the trade:

Saw-logs.

Soft Woods.	Ft. B.M.
White pine	75,000,000
White spruce	12,000,000,000

Hard Woods.	Ft. B.M.
Birch, yellow and black	100,000,000
Maple	50,000,000
Elm	20,000,000
Ash	5,000,000
Beech	10,000,000
White birch (bouleau)	25,000,000
Poplar	15,000,000

Pulp-Wood.

	Cords.
Spruce, white and black	20,000,000
Fir	10,000,000
Poplar	5,000,000

Railway Ties.

	Pieces.
Cedar	150,000,000
Beech	5,000,000

Poles for Electric Wires.

	Pieces.
Cedar	7,500,000

Shingles.

	Shingles.
Cedar, logs and hollow butts.	500,000,000

Square Timber.

	Cub. Ft.
Cedar, for frame and railroad culverts	25,000,000

The black birch of the Gaspé peninsula, which unfortunately is but little known, is perhaps the finest wood we have in this Province for cabinet-work and the manufacture of fine furniture. In color, it looks like mahogany, and it takes the finest polish. Maple is also a superior material for the manufacture of furniture. The large white birch (bouleau), which has but a thin coat of white sap, with all the core of a reddish color, is a most desirable substitute for cherry wood. The beech growing in the Temiscouata district, especially in the vicinity of the lake, at its north-east end, would also supply material of superior quality for cabinet work.

General Recapitulation.

Now let us recapitulate all the data given for each of the three regions, in order to make an approximate valuation of all that forestry wealth. We find the following quantities:

Saw-logs.

Soft Woods.	Ft. B.M.
White pine	30,725,000,000
Red pine	7,500,000,000
Spruce	107,000,000,000
Banksian pine	10,000,000,000
Hemlock	200,000,000
	155,425,000,000

Saw-logs.

Hard Woods.	Ft. B.M.
Birch	400,000,000
Maple	350,000,000
Oak	10,000,000
Elm	220,000,000
Ash	130,000,000
Basswood	100,000,000
Birch (bouleau)	10,175,000,000
Poplar	10,265,000,000
	21,650,000,000

Pulp-Wood.

	Cords.
Black spruce	426,874,470
White spruce	50,000,000
Fir	113,618,607
Poplar	155,000,000
	745,493,077

Railroad Ties.

	Pieces.
Banksian pine	450,000,000
Cedar	260,000,000
Birch	20,000,000
	730,000,000

Poles for Electric Wires.

Cedar, number	17,500,000

Shingle Blocks.

Cedar, ft., B.M. 700,000,000

Square Timber for Frame and Culverts.

Cedar, cubic feet 30,000,000

Taken as a whole, those quantities are rather below than above the real mark, and of course, they include those trees only which have the diameter prescribed by the rules of the Department of Crown Lands.

Value of the Forests.

As regards the revenue to be derived by the Provincial Government under the form of stumpage duties, it is easy to ascertain this value, by simply multiplying the quantity of each kind of timber by the tariff rate, which gives the following result:

From this, deduct one-fifteenth part, for the timber growing in seigniories and on other lands held by private parties, whose timber is not subject to Government stumpage, and there is left $421,459,482, representing for one hundred years an annual revenue of $4,214,594.

We have seen that the forest area of the Province covers 327,721 square miles. Of those forests, about 84,000 miles are held in freehold by private parties and under license for the cut of timber, which leaves upwards of 243,000 miles available and to be placed under license. At a comparatively low rate of $75 per mile, the bonus on the licensing of those available berths would bring to the Provincial Treasury $18,225,000, which spread over the 100 years represents another annual revenue of $182,250.

White pine, M.	30,725,000	at $1 30	$39,942,500
Red pine, M.	7,500,000	“ 80	6,000,000
Spruce, M.	107,000,000	“ 65	69,550,000
Banksian pine, M.	10,000,000	“ 65	6,500,000
Hemlock, M.	200,000	“ 65	130,000
Hard woods, M.	1,110,000	“ 1 30	1,443,000
White birch, M.	10,175,000	“ 65	6,598,750
Poplar, M.	10,265,000	“ 65	6,672,250
Pulp-wood, cords	745,493,077	“ 40	298,197,231
Railroad ties, pieces	730,000,000	“ 02	14,600,000
Poles, pieces	17,500,000	“ 05	875,000
Shingle blocks, M.	700,000	“ 65	455,000
Square cedar, cub. ft.	30,000,000	“ 02	600,000
			$451,563,730

Value for Farmers and Woodmen.

Now let us see what the exploitation of that forest wealth is worth for our farmers and woodmen. For a basis of calculation, we will take the average current prices actually paid by lumbermen to cut the timber and haul it to the river banks, ready for the drive, or to railway stations, leaving out the wages representing the cost of the drive. With this data, we form the following table:

White pine, M.	30,725,000	at $6 00	$184,350,000
Red pine, M.	7,500,000	“ 5 00	37,500,000
Spruce, M.	107,000,000	“ 4 00	428,000,000
Banksian pine, M.	10,000,000	“ 3 00	30,000,000
Hemlock, M.	200,000	“ 4 00	800,000
Hard woods, M.	1,110,000	“ 5 00	5,550,000
White birch, M.	10,175,000	“ 4 00	40,700,000
Poplar, M.	10,265,000	“ 3 00	30,795,000
Pulp-wood, cords	745,493,077	“ 2 50	1,863,732,692
Railroad ties, pieces	730,000,000	“ 10	73,000,000
Poles, pieces	17,500,000	“ 50	8,750,000
Shingle blocks, M.	700,000	“ 4 50	3,150,000
Square cedar, cub. ft.	30,000,000	“ 10	3,000,000
			$2,709,327,792

Divide this by 100 and you have $27,3,377 to be earned yearly by farmers d woodmen for 100 years. And then ere are the wages to be earned on the rive, in the mills, and the freight to be rned by railways, which would foot up about $15,000,000 a year.

Some will perhaps object that a large ortion of this forest wealth is unavailble and consequently worthless, because e timber cannot be taken out of the orest by water.

This objection can apply only to the orests in the territories of Mistassini nd Abitibi, for the rest of our forest omain is traversed in all directions by umberless rivers on which timber is riven to the mills, to the sea-shore and ea-ports and to railways which carry it the great centres of trade and commerce. In this respect, few are the counries enjoying as good accommodation, as reat advantages and as much facility as ne Province of Quebec, for the removal f timber from the forests, particularly ith regard to soft woods. The exploiation of these forests on a lesser or larger cale is merely a question of demand for heir products and of necessity this demand should increase with time, populaion and the exhaustion of forests in other ountries.

Now, for the exploitation of the forests f Abitibi and Mistassini, is there not a right prospect in the North-West Teritories? Ere many years the five or ten millions of farmers who will have settled n those Territories will want large quanities of timber and lumber for their uildings; the thousands of miles of new ailroads, which shall be built to carry he millions of bushels of grain raised in hose vast Territories will require scores of millions of ties and considerable quantities of timber and lumber. Are not the forests of Abitibi and Mistassini in a favorable position to compete for this trade? The timber and logs could be so easily driven on the Nottaway and Rupert rivers to the port at the mouth of these two great rivers and thence carried by sea crafts to Fort Churchill, a distance of 900 miles. From Churchill, about 350 miles of railroad, through a generally level and very easy country, would take that timber and lumber to the centre of the best farming and wheat lands in those Territories. Manitoba is striving to get a railroad built to York Factory, to connect with navigation on Hudson Bay. If that project ever materializes, would not that procure a desirable outlet for the forest products of Mistassini and Abitibi? Transportation by waterways is comparatively so cheap!

As regards Abitibi, there are four companies chartered to build railroads intended to reach James Bay through this territory, three from south to north, and one from east to west. In all probability, the Grand Trunk Pacific will also run through that territory, and this should impart practical value to its forests. A piece of railroad about seventy-five miles in length, from Lake Victoria northwards, could bring the timber of that portion of Abitibi to the Ottawa river, on which it would be driven to the mills and railway stations on this river and thence the lumber would be shipped in the same manner as the lumber sawn from logs cut in the Ottawa territory.

But to remain on the safe side, let us take exclusively what is actually available, viz., the forests of the Southern and Central Regions, and only 30,626,676 acres in the Northern Region, comprising the upper section of the six counties of Champlain, St. Maurice, Maskinongé, Berthier, Joliette, Montcalm, and 25,250,876 acres of the most accessible woodlands in Chicoutimi and Saguenay. This brings down to 109,055,427 acres the forest area actually available.

At the conservative estimate per acre of 2½ cords for black spruce, one-half cord for white spruce tops, and one-half cord for fir, the following quantities of pulpwood could be cut on those 30,626,876 acres of woodlands; black spruce, 76,567,190 cords; white spruce, 15,313,438 cords; fir, 15,313,438 cords, forming a total of 107,194,066 cords. Computing the white spruce saw-logs at only 500 feet B.M., to the acre, this territory would produce 15,313,438,000 feet of lumber.

Hard woods have a commercial value only so far as they are accessible to railroad transportation, either for the raw material or the manufactured. Under our present circumstances, not more than 20 per cent. of our hard woods enjoy the advantage of accessibility to railroad transportation, and in order to make a correct estimate, this must be taken into account. With all those deductions and restrictions, the actual contents of our available forests may be stated as follows:

Saw-logs.

	Feet.		Stumpage.
White pine	30,400,000,000	at $1 30	$39,520,000
Red pine	7,500,000,000	“ 80	6,000,000
White spruce	87,313,438,000	“ 65	56,753,735
Hemlock	200,000,000	“ 65	130,000
Birch	80,000,000	“ 1 30	104,000
Maple	70,000,000	“ 1 30	91,000
Oak	2,000,000	“ 1 30	2,600
Elm	44,000,000	“ 1 30	57,200
Ash	26,000,000	“ 1 30	33,800
Beech	25,000,000	“ 1 30	32,500
Butternut	1,000,000	“ 1 30	1,500
Basswood	20,000,000	“ 1 30	26,000
White birch (bouleau)	35,000,000	“ 65	22,750
Poplar	53,000,000	“ 65	34,450
	125,769,438,000		$102,819,535

Pulp-wood.

	Cords.		
Spruce	148,870,628	at $0 40	$59 548,251
Fir	27,913,338	“ 40	11,165,335
Poplar	11,000,000	“ 40	4,400,000
	187,783,956		$75,113,586

Railway Ties.

	Pieces.		
Cedar	220,000,000	at $0 02	$4,400,000
Banksian pine	211,253,352	“ 02	4,225,067
Beech	4,000,000	“ 02	80,000
	435,253,352		$8,705,067

Poles for Electric Wires.

Cedar, pieces	17,500,000	at $0 05	$875,000

Shingle Bolts.

Cedar, ft., B.M.	1,300,000,000	at $0 65	$845,000

Square Timber.

Cedar, cub. ft.	30,000,000	at $0 02	$600,000

The total of stumpage dues amount to $188,958,188.

Distributed over a period of 100 years, this represents for the Provincial Government an annual income of $1,889,581.88 per annum in stumpage duties.

For farmers and woodmen, the cutting of the logs and the preparation of the timber, delivered on the river banks or at the railway stations, represent the following amount of wages for men and horses

Saw-Logs.

hite pine	$182,400,000	
ed pine	37,500,000	
		$219,900,000
ruce		349,253,752
emlock		800,000
		569,853,752
ard woods	$1,340,000	
hite birch	140,000	
plar	150,000	
		$ 1,639,000
		$539,092,752

Pulp-wood.

ruce	$372,179,570	
r	69,783,384	
plar	27,500,000	
		$469,462,954
ailway ties		43,925,335
les for electric wires		8,750,000
ingle blocks		8,450,000
uare cedar		3,000,000
		$1,082,681,041

Putting together the Government dues
d the wages of woodmen, the different
nds of timber represent respectively the
llowing values:

Kind of Timber.	Government Dues.	Wages.	Total.
Spruce	$116,301,986	$721,433,322	$837,735,308
Pine	45,520,000	219,900,000	265,420,000
Fir	11,165,335	69,783,000	80,848,719
Cedar	6,720,000	42,200,000	48,920,000
Poplar	4,434,000	27,659,000	32,093,000
Banksian pine	4,225,000	21,125,335	25,350,402
Hard woods	428,600	2,190,000	2,618,600
White birch	32,750	175,000	197,750

Of the total, spruce forms 64.78 per
nt. and pine 20.52 per cent. Fir comes
for 6.25 per cent. and cedar for 3.78 per
nt.

The saw-logs, in Government dues and
ages, form a total of $674,312,287 for all,
d the pulp-wood, $544,576,540, a differ-
ce of only $129,735,747, which clearly
ows the possibilities of the pulp-wood
siness. If, instead of taking only 25,-
0,876 acres in the counties of Chicoutimi

and Saguenay, we would take the 87,494,628 acres of forest comprised in those counties, it would add to the quantities of floatable pulp-wood 155,609,380 cords of spruce and 38,902,345 cords of fir, or a total of 194,511,725 cords which would yield $77,804,688 in stumpage dues for the Government, and $486,279,312 in wages for woodmen, or a total of $564,084,000. Add this to the $544,576,540, mentioned above, and you arrive at the phenomenal sum of $1,030,855,852, as representing the value in Government stumpage dues and woodmen's wages, leaving aside over thirty million cords of poplar, of the pulp-wood we have in the forests comprised within the former limits of the Province of Quebec, viz., before the annexation, in 1898, of the territories of Abitibi, Mistassini and Ashuanipi.

These figures may convey an idea ot the possibilities of the pulp and paper industry in the Province of Quebec.

Evolution in the Value of Forests.

White pine, some thirty years ago, was considered as the only timber possessed of commercial value, especially for the export trade. Explorers sent out to value wood lands would not look at spruce, hemlock, fir, cedar, even red pine, which they regarded as worthless and classed them in the category of rubbish. By and by, it rose in the estimation of the trade, and to-day it nearly equals white pine in value. White spruce came up next and now ranks amongst the kinds of timber most sought for, even for export trade. One of our lumber kings, the Hon. Senator W. C. Edwards, who speaks from experience, does not "hesitate to say that there is more money in spruce than pine, that he regards no investment in Canada as good as an investment in a spruce limit, and prefers it to pine." Another lumber king, Mr. J. R. Booth, made the following statement in his evidence before the Colonization Commission.

"Formerly our explorers, that is the men we send to explore and report on the nature of the forest, would go round on the limit and report to us that there was a certain quantity of pine in such a part, and when we would ask them, what was on the rest of the limit, they would reply, and that would settle it: 'Only rubbish,' meaning that it was of no value, and as a matter of fact, spruce at that time was of no value. To-day that very spruce on those limits renders a value equal if not superior to the value that time of pine limits.

"To go a little further and to show you how the value of the forests has increased, let me say that at that time we did not put any value at all on red pine. Many years ago, after I had commenced this business, we would not have cut a red pine in logs, where we had only to cut it and pitch it along into the river or the lake and let it take care of itself; no red pine for the lumberman at that time. Now, as we go along, wherever we can get spruce, we cut it just the same as we do the pine, and the red pine too comes in now as well as the white one. The red pine is worth to-day as much as the white pine. I speak of that to show you the difference that a few years have made in the value of the forest."

Cedar is another kind of timber formerly considered as of no value for commercial purposes and now ranking amongst the most valuable kinds of timber. "That is a kind of wood," says Mr. Booth, who speaks from experience, "that will come forward as it gets better known. It is a wood of which railways will now get all their ties. A few years ago, you could not sell a single cedar tie to put in a railroad. A few years ago, we commenced to put them to our line (the Canada Atlantic Railway). We considered that the railroad was well provided with them. To show you how the cedar tie is now valued, compared with that time, the Grand Trunk applied to me to see if I could suppl them with cedar ties. I offered som tamarac ties, but word came back tha none but cedar were to be bought b them. Now they use the cedar just th same as they used tamarac, and the ceda ties will last from fifteen to twenty year and the tamarac not more than five years That shows the value of our forests. look upon the cedar that I have upon m limits as just as valuable as the pine. Ceda and what it is generally worth to us i not generally thought of by the casua observer. It is used for tubs, for ties, i makes the most reliable culverts on railways, it is used for telegraph poles, telephone poles and for the tubs needed i paper mills. We have no timber in thi country to take the place of this kind o timber. Cedar is also used for fence post and nothing can replace it. In the Unite States a cedar tie is more valuable tha than any other tie. These are some o the reasons that I say we have immens wealth at our command in our forests If not only those that will sit down an think it over, but even those that giv but a passing thought to it, will paus and look around, they will see a grea many different kinds of timber that w used to look upon as having no valu now coming into the market so fast w will soon realize what our forests wil be worth in a few years."

Some twenty years ago, the Hon. W. C Edwards made the following statemen before a committee of the Legislative Assembly: "I make the statement here, tha I attach value to every green thing tha grows upon a timber limit. As pine becomes less, I consider the value of othe woods enhanced. I consider the pine spruce, red pine, birch, maple, hemlock tamarac, and cedar of commercial value Beech, I think, will come in too, whit wood, or basswood, also. I consider tha all the timber on the limits will yet com in and be available as a commercial asse to the Province."

That prediction has been fully realized with regard to soft woods formerly considered as having no commercial value such as cedar, hemlock, fir, and blac spruce, and it will also be realized with re gard to hard woods, as they are made accessible by railroads.

A most remarkable instance of this evolu-ion in the commercial value of our forests, is that regarding black spruce and ir. Not many years ago, black spruce, which attains but a comparatively small diameter and makes a very poor lumber, was considered entirely worthless, and a umberman talking of buying a black spruce berth would have been considered as *non compos mentis*, or out of his mind. To-day these same black spruce berths are looked after with the same eagerness and bring much higher prices than white pine limits did twenty-five years ago. And I will venture to say that in many cases there s more clear money in the exploitation of a black spruce berth, where it is favorably situated, than there is in the exploitation of an average white pine limit.

The Principal Causes of this Evolution.

That the neighboring States of Maine, New Hampshire, Massachusetts, Vermont and New York want timber from the Province of Quebec is a fact beyond serious contestation. Masses of statistics, of a more or less reliable character, have been published to prove the contrary. I will not worry in an attempt at refuting those statistics, but I will mention a few facts which will show the consideration which those statistics deserve.

The official trade returns show that we export yearly to the United States many millions worth of timber and lumber. If our neighbors have at home all the wood they want, why do they come here to get so much of ours and pay the cost of transportation, besides and above the intrinsic value of the wood?

The same remarks apply to pulp-wood. The census of the United States show that in 1900 the American pulp and paper mills consumed 349,084 cords of Canadian spruce, costing on the average $6.50 a cord, and 1,160,118 cords of American spruce, costing on the average $4.81 a cord, or $1.69 less than the Canadian wood. This represents a difference of $589,942. Why would the American manufacturers pay us that difference, if really they can find at home all the pulp-wood they want, of the same quality and as conveniently situated? They also bought from us 20,133 cords of poplar to manufacture into pulp, besides the 236,820 cords they procured at home. That was not sufficient, however, to meet all the requirements, and the pulp mills consumed 220,155 cords of inferior woods for pulp making, such as yellow birch, hemlock and kindred stuffs. If they have at home all the good wood they require and growing in situations where it is available, why do they use those poor woods, which can only yield products of the lowest grade?

I would not like to be understood as pretending that the forests of the New England States and New York are depleted or completely exhausted, which is not the case; but I maintain that practical exhaustion is near at hand through a large portion of those forests, and that another portion, well timbered as it may be, is unavailable on account of the absence of waterways to take the products out of the forest, or of its remoteness from railways and inaccessibility to railroad transportation.

Nearly one-fourth of the best forests of northern Maine is in this predicament. To bring that wood to the large mills of Rumford Falls, which control mostly all the cut of that timber, they would have to float it down the St. John river, and thence use railways to carry it several hundred miles inland to the mills, which is impracticable with profit. As a matter of fact, some of the proprietors of those wood lands sell the cut of this timber to the St. John mills, to which it is of easy access by water. This, nevertheless, materially lessens the possibilities of Maine, as a pulp-wood producing State, and in this respect, it is the State which above all others is endowed with the largest resources. In 1900, if the census is correct, the pulp mills of Maine used 20,638 cords of spruce imported from the Province of Quebec and for which they paid an average price of $8.24 per cord. During the same year, they used 265,359 cords of domestic spruce, which they got for $4.99 a cord, delivered at the mills, or $3.25 less than the Canadian spruce. Why would those mills pay $3.25 more per cord for Canadian spruce, if they have at home all the wood they want and of the quality they require? Of the 196,180 cords of spruce manufactured in the mills of New Hampshire, 87,139 cords, or 44.11 per cent., came from the Province of Quebec. The mills in Vermont consumed 56,958 cords of spruce, of which 25,442 were brought from our Province. The mills of the State of New York manufactured into pulp 505,154 cords of spruce, 141,729 of which was Canadian spruce. 45,227 cords of Canadian spruce were also used by the the pulp mills of Indiana, Pennsylvania and Wisconsin. Besides the wood, the American mills purchased about seven-eighths of all the pulp manufactured in the Province of Quebec this year.

All those facts show that the paper industry of the United States wants our pulp-wood, and that the demand from this source will increase at the same rate as the home supply decreases. I would not say that the American pulp and paper manufacturers cannot do without our wood, but I contend that they can do much better with it, and on this contention I base the opinion that the requirements of the American manufacturers impart to our forests of pulp-wood a value which can only increase with time, if we take care not to bar that trade by unwise regulations or legislation.

The extension of our railway system is also a factor in the enhancement of our forest values. Accessibility by railroad has already made available a great part of our hard woods. Several roads are projected which will run from east to west through the Central Region, with terminals on the Georgian Bay, where they will connect with steam navigation on the Great Lakes. Scores of millions of feet of hard wood in the forests to be traversed by those railroads, which are now worthless, will be turned to account as soon as such means of transportation will allow them to be carried profitably to the furniture factories of Grand Rapids and the unlimited market of Chicago. By this route the pine and spruce of the Ottawa territory will travel only 125 miles by rail and less than 500 by water to reach the market of Chicago, which absorbs yearly abou two billion feet of lumber, and also the market of Milwaukee, which takes an average of 250,000,000 feet. Actually these markets are closed to the products of the upper Ottawa territory by the excessive length and cost of transportation. In one of his reports, Mr. Henry O'Sullivan shows that several thousand square miles in the north-eastern section of that territory contains an abundance of good pine and spruce timber which can be made available only by the construction of railroads. "In case," he says, "of a railway being built anywhere in the vicinity of Kakabonge or Bark lakes, this whole region covering one thousand square miles of territory, might be served with lines of steamers in connection with the railway. Although the first quality of pine has been culled here some years ago, there is still a great deal in the interior, and owing to the great distance and roughness of the rivers, the cost of driving is such as to forbid the handling of spruce or second quality stuff of any kind. With a railway and steamboat service, it would be different; mills could be built on the spot and every kind of sawed lumber shipped by rail.

"In the last mentioned report, I dwelt on the great advantage that would accrue from the diverting of the Lake Victoria waters by the valley of the Dumoine, if it were possible to do so; but in the event that this may be be found impossible, a more desirable and beneficial alternative would be the building of a railway through that country. A glance at the general map of that region will show that between the discharge of Lake Barrière and the discharge of Lake Des Quinze, there are over six thousand square miles of territory drained by the Ottawa and its tributaries above Lake Des Quinze, that can never be developed to any advantage without a railway. I am not prepared to say that all this great extent of six thousand square miles is fit for agriculture or well timbered; but I can safely say that more than half of this area is within the limits of the best pine-growing region now available in the Province, and that a great leal of good agricultural land may be ound there also.”

The Grand Trunk Pacific, probably, and he Quebec and Lake Huron Railway, for certainty, will open this territory within hree or four years, and more in the new bitibi territory, thus imparting a high alue and making practically available hose six or seven thousand square miles f rich wood lands, and adding so much o our forest wealth and resources.

The same factors will in the same maner contribute to the rapid evolution in he value of our forest wealth in many ther sections of the Province.

Quantities Cut for Domestic Use and Export.

On this point the census of 1901 supplies the following statistics:

	Ft. B.M.	
Pine.		
Saw-logs	445,036,000	
Square timber .	15,595,484	
		460,631,484
Spruce.		
Saw-logs	599,447,000	
Square timber..	41,792,520	
		641,239,520
Hemlock.		
Saw-logs		38,121,000
Cedar.		
Shingle blocks and squares..	68,777,000	
Piles and poles.	2,738,440	
Ties (2,703,807).	8,111,421	
		79,626,862
Hard Woods.		
Elm	3,465,860	
Ash	2,104,444	
Yellow and white birch..	6,877,808	
Maple	963,276	
Oak	718,156	
Hickory	151,000	
		14,082,344
Pulp-Wood.		
Spruce, cords..	474,178	284,506,800
Fir	52,687	31,609,200
		1,549,817,210

The several quantities are converted into feet B.M. for the purpose of facilitating comparisons.

How Long Will Our Forests Last?

The most plausible manner to answer this question is to compare the contents of the forest with the yearly consumption as shown by the census; and not to overstep the limits of sound reality we will take only the reduced quantities given for that portion of our forests actually available and enjoying the advantage of accessibility to railroads and water-ways. Dividing the quantity in stock or in forest by the quantity of the yearly consumption, the quotient shows the number of years during which the supply will last. This result is shown on page 80.

The number of years shows the mathematical period of duration without taking into consideration the various circumstances of a nature to shorten or to lengthen that period. Fire, indiscriminate settlement, unwise or unlawful cutting, waste in lumbering operations, the power of self-reproduction on the part of certain kinds of timber and the extension of railways through the forest are in this respect factors of potent efficacy, and deserving of the most serious consideration.

For those who have given special attention to this matter it is a well-known fact that fire has destroyed many times more valuable timber than has the axe of the lumberman. This is especially the case with regard to pine. Before a committee of the Legislative Assembly Hon. Mr. Edwards stated as his “candid conviction that at least twenty times as much has been destroyed by fire as has been cut by the lumberman, having regard to the destruction of young timber that was growing at the time of the destruction.”

That statement refers to the pineries of the Ottawa territory, which contain practically all the pine we have in this Province. If fire is allowed to continue its work of destruction, it would not be safe to extend the duration of pine beyond forty or fifty years.

Stock.		Yearly Consumption.	Years.
Pine, feet	37,900,000,000	460,631,484	82
Spruce, feet	87,313,438,000	641,239,520	137
Cedar, shingles and square feet	1,660,000,000	68,777,000	24
Cedar ties, number	220,000,000	2,703,807	81
Cedar posts, number	17,500,000	119,072	147
Hard woods, feet	356,000,000	14,082,334	25
Pulp-wood, cords	176,783,966	526,865	334

Then there are the inroads under the pretext of settlement. As far as can be ascertained by the records in the Department of Crown Lands during the last sixty years, the regular lumber business has removed from the forests of Pontiac and Wright about 18,000,000,000 feet of pine. If forest fires, caused chiefly by settlers in clearing lands, have destroyed, not twenty times, but only as much, the total removed by lumbermen and destroyed by fire amounts to 36,000,000,000 feet, which would mean that under the present circumstances, as regards forest fires and the same rate of production by the lumbermen, the stock of pine now available in the Upper Ottawa territory will be gone within fifty years hence. Forest protection has been better for the last few years, but the inroads of colonization are getting worse from year to year, so that there is not much hope of improvement as regards the preservation of the pineries. And the regular cutting by lumbermen will most probably increase as they have better means to ship their products to the ports on the great lakes, and thence to Chicago, which demands more every year and pays higher prices as pine disappears from Michigan, Wisconsin and Minnesota.

All those circumstances considered, it may be said without exaggeration that fifty years is the longest time which may be assigned to the duration of our pineries. Of course, self-reproduction of the forest might help prolonging that period, but there is not much to expect from this source. Pine only reproduces in some sections under the most favorable circumstances, and it remains to determine whether, even under those favorable circumstances, it will keep on reproducing.

Cedar is in the same position as pine. It is not so much exposed to destruction by fire, but the indiscriminate and senseless cutting which has been going on for some years, and increases all the time, will soon make that timber a thing of the past, as is now the case in Maine, where the same practice prevailed for some ten or twenty years.

Hard woods in the sections where they are actually available will certainly last the period assigned to them, even under an increased production, and, taking into consideration what new railroads will make accessible from year to year, the supply may be regarded as practically inexhaustible.

Our supply of spruce for saw-logs and pulp-wood, if protected against fire and prudently husbanded, is practically exhaustless. As a rule, this species reproduces by natural growth in fifteen or twenty years, if you cut only the big trees and leave the smaller ones—nine inches and under in diameter—to grow. The spruce forest is not, by the nature of the wood, so much exposed to fire as pine, and in case it is run over by fire, the timber can be cut profitably after the disaster, which is not generally the case with burnt pine. And by cutting only the larger trees, you stimulate the growth and development of the smaller ones, which then have more room and light, a circumstance which tends to stimulate the growth and improve the quality of the wood.

Unfortunately the desirable results which we might expect from this self-reproduction of spruce are wiped out by our irrational system of colonization. By granting lands for colonization purposes indiscriminately and allowing settlers to take lots far away from settlements, we force the limit holders, the very men who have the greatest interest in its preservation, to destroy that forest in which they have invested large sums of money. In order to serve their best interests and secure permanency for their investments, lumbermen endeavor to prolong their trade by careful cutting and careful manipulation of the timber on their limits; but they are human, just as other people, and when they apprehend that they are to lose the fruit of their labor and wise husbandry through the invasion of colonization they quite naturally try to make the most out of the situation; they forcibly give up the system which they had followed for years in the management of their domain, and cut everything out of which they can make money and realize as much as they can for the purpose of recouping themselves for past disbursements. They act upon the principle that charity begins at home.

In this respect, however, the speculator or bogus settler is the chief factor in the destruction of the forest, as he practically pays nothing to secure the right to cut the timber; as he has not to maintain the value of an investment; as he is not, like the limit-holder, bound to cut only the trees of the diameter prescribed by the regulations of the Department; as, above all, his sole and only object is to make as much money as possible in as short a time as possible, he simply sweeps the forest, cutting and removing even twigs, if he can get money for them, and leaving not a tree of a size to bear seed for another growth. Moreover, the heaps and masses of branches, chips and other inflammable material which he leaves on the ground, invite fire, which generally answers the call, and once started extends its work of destruction to the neighboring green forests.

For one who has not verified the facts on the spot, who has not seen them with his own eyes, it is impossible to form an adequate idea of the damages caused by squatting or the location of settlers in the middle of a bush, more particularly in a pinery. I submit the following facts to those who are disposed to study the question in good faith and impartially:

Some years ago a man by the name of Antoine Lafond settled in the forest near Lake Cagamont on the Eagle river, far away from other settlements. In clearing land for a crop of potatoes, which yielded five bushels, he started a fire which destroyed three hundred million feet of pine. The pine so destroyed would be worth to-day $390,000 to the Government in stumpage dues, $1,800,000 in wages for woodmen, and at the low rate of $4 per M. standing, $1,200,000 in profit for the holder of the limit. To put it briefly, to raise a crop of five bushels of potatoes that settler destroyed timber which to-day would be worth at least $3,390,000. The country thus laid waste is now a worthless desert, where no settler would care to locate, so that this land is lost to all purposes. In his evidence before the Colonization Commission last year Mr. J. G. Gillies swore that his firm had lost in the same manner one hundred million feet of pine in the Temiscamingue country, which represents a loss of $1,130,000 to the Government, the woodmen and the limit holder. The late Mr. Alexander Lumsden mentioned two other similar cases where, in order to clear a few acres of bad lands in the Lake Kippawa region, fires were lighted that destroyed more than one hundred and twenty million feet of pine. If this system is allowed to continue any longer the prospect of duration of our pineries is not bright.

Our spruce forests have suffered considerably from the same cause. In the north-eastern part of the Province the trouble is with the Indians. For the purpose of signalling, or creating blue berry plains to attract bears, or through negligence in camping, they start fires which destroy every year vast areas of forest. In regard to this, Dr. Low, in his valuable report on the Labrador peninsula, mentions facts deserving the consideration of all those who take any interest in the preservation of our forests.

How to Preserve Our Forest Wealth.

Many propositions have been submitted for the preservation of our forests, amongst which are cultivation and replantation. In the Province of Quebec these methods are neither desirable nor practicable. First of all, the Government has not the means to carry on a system of sylviculture on such a footing as to produce appreciable results. In the second place, where reforestation would be, perhaps, the most needed, our public lands are in the hands of capitalists, who have invested their money in forest as a business matter, and who cannot reasonably be expected to adopt any new system of forest management unless the ultimate returns are shown to be greater than those accruing from the ordinary methods of lumbering. As plainly stated by Professor Fernow, the only reason for lumbermen and most private owners to adopt forestry is the financial one; and here, as it is the case in the United States, every plan of forest management must be in a measure a compromise between the owner of the forest and the scientific forester. It is also a matter of compromise between the Government and the limit-holder. The object of the latter is to cut as much timber as possible without injuring the productive power of the forest, but he will most willingly leave a certain amount of capital invested in the forest in the form of growing wood, obtaining his returns from the sale of merchantable timber after the necessary period of growth has passed if he has the guarantee that his holdings will be fairly protected against dishonest encroachments under the pretext of colonization and against fire, which is the natural consequence of those encroachments.

Therefore, in the Province of Quebec forestry as a practical matter is limited to protection against fire and the inroads of timber pirates raiding the forest under the pretense of promoting colonization. "Rules," says Professor Fernow, "which are considered axiomatic abroad must often be set aside, and frequently results which could be obtained by the expenditure of a small amount of money must be satisfied because the owner of the forest cannot afford to make the investment. A sustained yield, an allotment of the forest into divisions, a permanent road system, the accessibility of all parts of the forest at one time, fire lines, improvement cuttings and the like, which are usually considered a part of forest management in Europe, each must, in many instances, be given up as impracticable for the present."

Those sane and practical remarks apply to our Province as they do to the State of New York, and should guide our action in matters of forestry. All our efforts should tend to the organization of a thoroughly effective system of protection against fire and the classification of our public domain into woodlands and farming lands, with the view of securing free access to the latter by bona fide settlers and strictly excluding wood pirates, thus securing the limit-holders in the tenure of their holdings, thus encouraging them to adopt in their operations a system which would secure the perpetuity of the forest by self or natural reproduction. Let this system be adopted, and our forests, particularly our spruce and pulp-wood forests, are practically inexhaustible, even under a production increased tenfold, compared to what it is now.

Our system of protection against fire has been materially improved of late, but is still inadequate, and lacks that high degree of effectiveness which should characterize it. The law is good, and would reach the end for which it was enacted if it was thoroughly observed; but when it comes to its strict enforcement, political influence interposes, and the best interest of the Province is removed to the background. In its report the Colonization Commission made the following recommendations, which should be carried out:

"The staff charged with this service are too subject to political influences to perform their duties with the energy and independence which can alone secure its effectiveness. In several cases political influence has caused the post of fire-ranger to be entrusted to men who have neither the activity nor the ability required to properly fill a position upon which depends the preservation of the greatest source of wealth of the Province.

"All the license-holders have in their service permanently guardians of provision depots, overseers and foremen, who possess a thorough knowledge of their respective territories, as well as of the neighboring establishments. We know of no men who are better in position than these to perform the functions of fire-ranger. We are of opinion that these men should be chosen and appointed in preference to all others, and that no others should be named, except in the localities where there are none in the neighborhood of timber limits under license. They also should be vested with all the powers conferred on Justices of the Peace by Articles 1353 and 1358 of the Revised Statutes.

"Of course, the Government should retain the control of this service, and for this purpose have one or two special officers, whose duty it would be to see that it was done actively and effectively. These officers would keep moving about all the time, from 1st April to 15th November, in the territories placed under their control, and would be bound to recommend the dismissal of any fire-ranger for neglect or incompetency."

"Against the fire danger," says Professor Fernow, "constant patrol seems to be the only help, all other means seeming more expensive and less efficient. . . . Again, the personnel of the organization is of first moment; and even when proper persons have been chosen only a constant inspection and oversight will keep the organization alive, its members on the alert."

The main object of a good organization should be rather to prevent than to stop conflagrations. When a fire is started it will very rapidly gain headway and run its course, all efforts notwithstanding, until a rain, a watercourse or swamp stops its spread. Therefore, the first duty of the fire-rangers should be to control the setting of fire to clearings in the neighborhood of the green forest. During the dry season no settler should be allowed to burn a clearing without having previously notified the nearest fire ranger, who should be on the spot with the force of men required to control the fire and prevent its spread where it is set in a dangerous place.

With our democratic principles of government it is, perhaps, a big undertaking to bring our people to appreciate the necessity of such a control, and it is, perhaps, in preparing public opinion for this evolution that societies like the Canadian Forestry Association would contribute in the most efficacious way to the maintenance of the forest, at all events as regards the Province of Quebec. Instead of wasting our efforts in growing a new crop of wood, let us limit them within the rather heavy task of keeping what is already grown and available.

In this respect it may be said that the Government is not doing enough, comparatively, for the protection of our forests. Our public buildings are worth less than $3,000,000. To protect them against fire we paid, in 1903, for insurance premiums and salaries to guardians, about $50,000. In 1903 fish and game yielded a revenue of $63,119. For the protection of this source of revenue we employed a staff of 315 fish and game rangers, to whom we paid $20,000 in salaries. For the same year (1903) the receipts from woods and forests brought to the Provincial Treasury $1,241,814. For the protection of this, our largest source of revenue, we employed a staff of 99 fire-rangers, to whom we paid $17,000 for salaries and expenses, to which the limit-holders contributed their fair share.

Now, when we spend $50,000 to protect public buildings worth $3,000,000; when we spend $20,000 to protect a source of revenue which yields $63,119, and which can be very easily and promptly renovated if temporarily destroyed, are we justifiable in spending only the meagre and inadequate bagatelle of $17,000 to protect against irretrievable destruction a forest estate constituting the best, the most valuable and available asset of the Province, an asset worth billions of dollars, capable of bringing to the Provincial Treasury a yearly revenue of $2,000,000, and procuring to our farmers and woodmen over $10,000,000 a year in wages and the sale of farm products?

The classification of public lands, such as authorized by a law passed by our Legislature last year, will do much to lessen the danger from fire if it is faithfully and energetically enforced. Colonization will be concentrated, and it will be much easier to protect the green forest against the fire started for clearing purposes. With a good staff of active and intelligent fire-rangers at hand, the danger will be minimized, and it is reasonable to hope that this legislation will produce the most desirable results if political influence does not interpose to block the accomplishment of this important reform. This law, if fairly but rigidly enforced, will also hit the deathblow on the nefarious brood of speculators on lots and timber pirates that constitute one of the greatest dangers for the forests.

Fires started by Indians are the most difficult part of the problem. Indians are under the exclusive control of the Dominion Government, who should be induced to take the steps required to prevent them causing in the forests of the north-eastern section of the Province damages which already amount to millions of dollars. In case the Federal authorities would fail to accomplish this, the Provincial Government will, perhaps, come to the determination of applying to Indians that disposition of our law which forbids anyone to go into the forest without a permit during the dry season. And if this disposition is not in our statutes, it should be enacted. As regards action on the part of the Dominion Government, the collaboration of the Canadian Forestry Association would be a great help, and I hope we will have the benefit of this collaboration.

New Brunswick's Forests.

By T. G. Loggie, Fredericton.*

From its earliest history, the products of the forests of New Brunswick have held a first place in its trade exports. Although a large section of the Province is admirably suited for agriculture, particularly the magnificent intervals of the River St. John, stretching almost from its mouth upwards to the limits of the Province, a distance of 300 miles, those of the Miramichi, Kennebecasis, and other valleys, and the broad salt marshes of the Upper Bay of Fundy; still lumber has remained king. New Brunswick contains an area of 17,750,000 acres, of this acreage 10,500,000 are granted lands, and 7,250,000 Crown Lands, and the Province is everywhere drained by large rivers, with innumerable branches, almost locking each other at their source.

It will thus be seen that lumbering can be carried on advantageously, as one has yet to find a section of the Province, where logs cannot be cut and driven down these waterways to market. Of these rivers, the St. John is the largest, and drains nearly one-half of the Province. Next in importance is the Miramichi, its watershed embracing about 5,000 square miles. The settled portions of the Province are principally along the river valleys and coast line; the interior forming one vast timber reserve and embracing a territory 80 miles wide and 100 miles long, without a habitation of any kind, save the lumber-an's or trapper's shanty, and no sound, xcept the ring of the woodman's axe or he call of the hunter. Here is a domain airly free from the ravages of fire and imbered with all kinds of valuable lumber. The greater part of this territory s unfit for cultivation, lying on the ranite and boulder formation, although he northern section, in its approach to he Restigouche River, runs into the pper Silurian belt, and consequently has ood deep soils. Everywhere over this elt, both black and white spruce abound, ome pine and vast quantities of the ardwoods that have scarcely been ouched, also large quantities of the inest and largest cedar in Eastern Canda.

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*A paper read before the Canadian Forestry Association.

Turning our attention to the country ying southerly and south-westerly of he South-West Miramichi, and extendng to the Bay of Fundy, we find a terriory heavily cut and in places badly urned. The Nashwaak River is an exeption, where Alexander Gibson, our Lumber King, still reigns supreme.

Forest Fires.

In reading reports from time to time, of the timber domain of Canada, as well s of the United States, the same story s read and re-read of devastation by forest fires. New Brunswick has not escaped. The great Miramichi fire that swept through the Province in the year 1825, is a matter of history. Scarcely a year elapses, without more or less fires, although of late we have suffered less perhaps, than our neighbors.

Our Legislature and lumbermen have grappled for years with this great question, and the Government has still under consideration more effectual methods in checking the ravages of forest fires. In the year 1885 the Legislature passed the Act now in force. It contains provisions prohibiting fires from being set between the first day of May and 1st December, except in clearing land, obtaining warmth or necessary industrial purposes, and hen precautionary measures to be taken. t is the opinion of many that no fires should be set at all, except under a written permit from the Fire Warden of the district. No fire to be set in the forest without first clearing away a spot five feet from where the fire is to be set. The Act provides that lumbermen shall call their crews together, read the Act, and warn them as to setting of fires.

The railway companies are required to provide their smoke-stacks with a bonnet, or screen, interwoven at the draught with wires (three times as many wires for wood as for coal), and sectionmen to pass over their sections once a day. The right of way to be cleared of all combustible material. A further Act provides that $2,000 can be expended in any one year, in carrying out the provisions as enacted. It is the opinion of many that while the provisions are to a large extent admirable, this Act can only be carried out by a well selected corps of Foresters or Fire Wardens, permanently employed by the Province, and along the same lines as the regulations of the Province of Ontario. These wardens could act as scalers of lumber, Fishery and Game Wardens, Labor Act Commissioners, and in other capacities of a public nature. The outlay for such a service would be large, but the results would be far-reaching, and in the best interests of the Province. There is no question in New Brunswick to-day of more importance, than the preservation of the forests.

Crown Timber Lands.

The total area remaining in the possession of the Crown, as stated at the outset, is in the vicinity of 7¼ millions of acres, of which quantity, 6¼ millions are under timber license, the remaining one million acres, being to a large extent, burnt and barren lands. Licenses from the Crown are issued annually, but there is an understanding they will run to 1st August, 1918. The stumpage on spruce, pine, fir, and cedar is $1.25 per M. sup. feet, and the yearly rental is $8 per square mile. The average annual cut for the last five years has been 120 millions of sup. feet, classified as follows:—

	Sup. feet.
Spruce and pine	95,000,000
Cedar	15,000,000
Hardwood	4,000,000
Hemlock	3,000,000
Fir	3,000,000
Total	120,000,000

Twenty-six scalers are employed to survey this lumber. There is a chief scaler in addition, whose duty it is to oversee the scalers under him and report to the Department the various operations being carried on and the probable cut of each operator. There are restrictions in the licenses, as to the cutting of undersized lumber, and no tree is allowed to be cut down that will make a log 18 feet long and 10 inches at the small end. The Government have, at various times been strongly pressed to allow undersized logs to be cut for pulpwood, but so far these requests have been met with refusal. In some sections where spruce has been found to be of a stunted or slender growth, and would never mature to saw logs, the Government have allowed the lumber to be removed, but the quantity so cut has been very small indeed.

In administering the forests of the Crown, one of the greatest difficulties met with is to guard the Department against fraudulent applications for land, under the guise of settlement. The tendency in applying for settling lands, is to secure a lot sufficiently timbered so as to allow the settler something at the start he can turn into money, either by cutting the logs himself, or selling his chance to someone else, which is directly contrary to the provisions of the Labor or Settlement Act. The greater number of those applying have no other motive than to cut off the lumber, and then allow their applications to lapse.

The Department is continually holding up applications, where reports have shown the lands are unfit for settlement. The licensees naturally protest against any such incursion into their limits, an the Department is left to adjudicate th matter, often to the displeasure of th settler or the licensee.

A common practice is to squat upo Crown Lands, without application, clea a small portion and erect a hut. In time the Department is forced, by som settling conditions, to approve his application, although in many cases the location is made among good timber. On can easily see the result. The cleare portion must be burned and the surrounding forest, is at once placed i jeopardy.

The separation of purely agricultura lands from the lands only fit for timbe growth is to my mind, one of the greatest needs in our forests, to-day. I hav reference to lands at present, only in th vicinity of settlement. Such an undertaking would no doubt, involve a larg expense. Only persons should be employed for this work whose judgmen could be relied upon as thoroughly competent in judging the soils. Followin this up with a corps of competent foresters for keeping down fires and supervising the cutting is the first essentia to the preservation of our forests.

Private Ownership of Lands.

Of the lands that have passed fro the Crown, I will only deal with thre of the largest tracts. The grant to th New Brunswick Railway, for building narrow gauge railway from Fredericto to Edmundston, a distance of 167 mile was 1,647,772 acres, and embraces land principally on waters tributary to th River Saint John, and including parts the counties of York, Carleton, Victori and Madawaska. W. T. Whitehead, th company's agent, has this year, given m the following estimate of the quantit of lumber on these lands:—

	Sup. feet.
Spruce	3,014,000,000
Fir	3,014,000,000
Hardwood	4,743,000,000
Cedar	406,000,000
Total	11,177,000,000

Of this large tract the company has sold only 600 acres. Fully one-third is situate on the upper Silurian formation, representing some of the best settling lands in the Province, but the policy of the company is not to sell any for farming purposes, and the progress of that section of the Province is consequently retarded. It has been proposed that the Government should buy back the settling portions of these lands, which, if accomplished at a reasonable price, would, in the opinion of those who have studied the question, be productive of great results.

The next largest ownership is that of the Alexander Gibson Company, who hold in fee simple upwards of 225,000 acres, located principally on the Nashwaak River, and absolutely controlling the lumber lands on that river. Mr. Gibson purchased the greater part of these lands in the early sixties, and has been cutting them ever since, without a break. The growth is principally black spruce, which replenishes itself about every ten years, in cutting down to merchantable logs. In a conversation I had with Mr. Gibson, some ten years ago, he estimated these lands as worth to him twenty dollars per acre. It must be understood, however, that any such high valuation can only be explained by the peculiar advantages possessed by the owner. Over 1,000 millions of spruce have been cut on this property since Mr. Gibson's purchase, and judging from reports, the lands to-day are fairly abundant in timber. It may be mentioned here, that as much as 20,000 sup. feet per acre of spruce has been cut on choice bits of this property. In this connection I may mention the cut on a block of 3,000 acres I purchased on the Keswick River, in the year 1887, a tract not particularly well timbered at the time, but fast growing black spruce. In that year I left the stumpage on one million feet, again in 1892, it produced two million feet, and again in 1900 the operator paid me stumpage on two million more. In 1907 I am looking for a further crop of two millions.

The lands of Mr. Gibson have not been subject to much forest fire, partially owing to the distance from railway lines, but more particularly to vigilance which the owner displays in dry times.

Another large tract is that located on the upper waters of the South-West Miramichi, embracing an area of 160,000 acres, which I understand has lately passed into the hands of an American syndicate, at a price of upwards of $600,000. The timber growth is much the same as on Mr. Gibson's property.

Surveys of Timber Lines.

No timber lands can be properly managed without a system of carefully prepared surveys and block timber lines, as well as accurate maps. Generally speaking, the Crown Lands are blocked off into areas of six square miles, the lines running astronomical north and south, and east and west, 2½ miles each way. On some rivers, blocks are laid off 5 miles each way, and in the Restigouche country, the blocks are as small as 1,000 acres. The practice is to run the base lines 5 miles apart and large expenditures have in this way been made by the Government. The subdivisions of the licenses are surveyed after first getting an order from the Crown Land Office, accompanied by a plan, showing in detail previous lines run, while the order contains a description of the lines to be surveyed. All these surveys have been made by blazing lines through the forests with the ordinary compass. The system is open to considerable objection, but it is found practically to satisfy those whose interests are involved. A recommendation has been made to erect iron monuments at the corners of blocks, it being found that corner posts soon decay, or are swept away by forest fires.

Values of Timber Lands.

My experience would warrant the statement that timber lands have doubled in value within the last ten years. For the right to cut on Crown

Lands, not including stumpage, fairly good timber lands would be worth $200 per square mile, and first-class lands $500 and over a square mile, according to location. The price of soil right lands have probably increased in the same proportion, prices ranging from two to five dollars per acre, although some properties have lately been sold much above these figures, and running as high as ten dollars per acre for prime black spruce lands, easy of access and comparatively free from fire danger.

In summing up this paper, I would recommend:

1. More effectual means for the protection from fires.

2. The separation of the timber lands from agricultural lands.

3. A carefully selected corps of permanently employed foresters.

4. Restrictions as to the cutting of undersized lumber.

Perhaps I may be expected to add reforestation, and while much can be said about tree planting, I am of the opinion our efforts at present will be better met by a more efficient preservation of our forests, and more careful cutting of the standing timber. New Brunswick has yet a noble heritage in her forests. Let us then work together to preserve this heritage so that we ourselves and future generations may reap the benefits which nature has so lavishly bestowed. In conclusion, again, let us not forget the old Scotch saying: "Be aye stickin' in a tree; it'll be growin' when ye're sleepin."

The Forest as a National Resource.

JUDSON F. CLARK, PH.D., ONTARIO GOVERNMENT FORESTER.*

The national resources of any country are its natural resources plus capital and labor. The soil, the mines, the fisheries, and the climate are the natural resources. The soil in conjunction with climate produces four great commodities—food, clothing, wood and water. The food and clothing belong to agriculture, the wood and water to the forest.

The forest is a national resource in that it is a source of raw materials, chief among which is wood, in that it is a conserver of water and a preventive of calamities such as floods, erosion, etc. It is also a national resource in its beneficent effect on climate, in providing an ideal playground for the people, and as a field for the profitable employment of capital and labor.

Wood in its various forms and by its various uses is becoming from year to year more and more a necessity of modern civilized life. It is a curious fact not generally appreciated, that the more highly civilized we become the more wood we use. Great Britain which is an enormous producer and consumer of iron, steel and cement,— the chief substitutes for wood in construction—has increased her use of structural timber about 80 per cent. during the fifteen years prior to 1900. This meant a per capita increase of fully 60 per cent. Her increase in cabinet wood consumption was still greater, being over 100 per cent., while that of wood pulp and its products made the amazing increase of 310 per cent. The same is true in Germany, in Switzerland, in the United States,—in fact, in all civilized countries. Decreasing available supplies of timber is equally a characteristic of our age with the increasing consumption of wood. This is due to over-cutting, unwise cutting, and to fire, and it is nowhere more in evidence than in North America, the country where increasing consumption is much the most marked.

Second only to its function of wood production is the function of the forest the conservation of water. Under atural conditions of forest cover the ow melts slowly in spring, making the ring freshet a much less dangerous atter, and giving the water time to sink to the soil. The forest floor with its oss and ferns and loose open soil, adily permits the rainfall to sink deep to the earth to re-appear at lower vels in the form of pure springs, an eal source of water for domestic use. he flowing streamlets from these rings unite farther down the valley to rm larger streams, which in their fall ive man his cheapest form of power. lowing finally to the plain, the water ay be used again to double, treble, or ven quadruple the crop of the farmer y irrigation, and finally finds its way to e sea in the form of navigable rivers, an's cheapest form of transportation. uch is the story of the blessing of ater when the hills which feed its ousand sources are covered by forest.

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*A paper given (with lantern illustrations) before the Canadian Forestry Association Annual Convention in Quebec.

Lumbering is, if unaccompanied by re, rarely a serious injury to the water ow, though indiscriminate lumbering ay, and usually does, mean the destruc- on of the forest from the wood produc- g point of view. As a matter of fact, owever, lumbering in North America practically always followed by fire. ire is not necessarily a bad thing for a rest. Controlled, and used to dispose f the debris, it may be of the utmost alue in preparing for a new crop and in aking the forest safe from future isaster by an accidental conflagration the debris caused by logging. Un- ontrolled, however, it is a curse of the rst magnitude. It destroys the mature mber, the young growth, and in some ases the very soil itself. The destruc- on of the mature timber is indeed often he lesser loss. The destruction of the oil is an irreparable national loss, for ith its destruction passes all hope of a uture forest, and comes every danger of ncontrolled stream flow. These dangers e those of flood, erosion, and silting.

The varied interests served by the rest as providing raw materials for future generations, conserving and regulating the stream flow, its influence on climate, and its advantage in providing a place for seeking health and recreation for the whole people indicate the state as the logical owner of all large areas of non-agricultural lands. This is also indicated on many other grounds. The long time element in maturing wood crops makes forestry practically almost impossible to the private owner except in the case of wood lots and other limited areas which are of direct financial advantage to the owner in several other ways besides as producers of wood. The fire problem can be satisfactorily solved only by uniform state management.

Canada is certain to take a leading place as a producer of forest products. she has woodland areas so vast as to almost stagger the imagination. She is most admirably situated as regards the greatest future market for timber—the Mississippi Valley. Her forests are chiefly coniferous, hence the most easily managed and having the highest producing capacity. Her spruce thirty or forty years hence will largely control the paper market of the world. In the past, however, our forest management with the exception of somewhat better protection from fire and in the retaining of the fee simple of the land in the state has not differed materially from the forest management that has devastated the forests of the United States, and which has begun the story of the man-made desert in our own north country. Recently a tremendous step in advance was taken in the adoption of the policy of placing the non-agricultural lands in forest reserves. The next and only logical step is to train men in practical forest management, that these reserves may be perpetuated by wise use.

The possibilities of revenue from our vast heritage are very great. I have on other occasions committed myself to figures on this proposition, which I consider to be very conservative. I will content myself to-night by saying that there is no reason why under rational forest management, the present revenue from our forest lands should not be increased many fold, not only without injury, but with actual benefit to the forest.

On the natural resources of a nation depends its whole prospect of future population and prosperity. The country with great natural resources is certain sooner or later by one race or other to become a great and prosperous nation. The destruction of the natural resources is striking at the very foundations of prosperity, and sooner or later will transform the richest lands to poverty. The destruction of created wealth—the product of accumulated labor—or the destruction of population itself, is not to be compared with the destruction of natural resource in that the former is temporary, while the latter is permanent. To illustrate: Egypt has during the past ten thousand years been repeatedly devastated of her accumulated wealth, but is again to-day entering upon what promises to be the most prosperous of her long and checkered career. She is fully recovering, or at least may fully recover from all kinds of former loss because her one natural resource—water for irrigation—has remained intact. Germany—for centuries the battlefield of Europe—has in recent years become more populous and more prosperous than during any other period of her history, notwithstanding repeated destruction of property and decimation of population in former times, for the natural resources of the country remained practically intact.

On the other hand, we have many melancholy examples of the destruction of the natural resources. Mesopotamia, once famed as the most fertile country in the world, of which Herodotus said that the grape could not be grown because of the excessive humidity of the climate, is now a weary waste of sands and rock incapable of supporting one man in poverty where it once supported a hundred in comfort. Palestine, once a land flowing with milk and honey, Sicily, for a long time the granary of the Roman Empire, and Greece, are also excellent examples of countries which were once the home of a teeming and prosperous population, but which with the destruction of their forests by reckless lumbering and fire have become the prey to erosion by wind and water, and are to-day mere shadows of their former glory, without hope of ever materially bettering their conditions. They hav destroyed their soil and water, and generations yet unborn must reap th fruits of an ancient folly.

But we do not need to go so fa afield to find the man-made desert There are tens of thousands of acres o it in the State of New York, in Pennsylvania, in Michigan, in New England, i California. But to come still neare home, there are tens of thousands o acres of it in British Columbia, i Quebec and in our own Province o Ontario, particularly in the Muskok region and along the line of the C.P.R But it is yet early in the day. Canada i yet in a position to be free from th curses of posterity in this regard. Th wisdom of her management of he management of her forest lands in th next half century will determine fo ages whether she was or was not worthy custodian of an almost unbounded wealth.

Gillies Bros., with mills at Braeside and Arnprior, have purchased 100 square miles of limits on the Montreal river, in the Temiskaming country for about $400,000. The limit belonged to the estate of the late Alex. Lumsden and J. R. Booth.

F. W. Bird & Son, East Walpol Mass., will open a branch of their bus ness at Hamilton, Ont. The firm ha bought nine acres of land, and will ere a $20,000 plant, which will employ abo 200 hands. The company will mak paper boxes and roofing paper.

Canadian Forestry Convention.

The sixth annual meeting of the Cana-ian Forestry Association opened at the ity Hall, Quebec, on Thursday, 9th March, Aubrey White, president, in the hair.

Among those present were: Aubrey White, assistant Commissioner of Crown Lands; W. H. F. Addison, Dr. Judson . Clark, G. H. Muir, and E. B. Biggar, f Toronto; R. H. Campbell, E. Stewart, Dr. Robert Bell, Norman M. Ross, Gor-on C. Edwards, H. Wallin, and Roland D. Craig, of Ottawa; Thomas Walklate, Hon. Recorder Weir, and Douglas Weir, f Montreal; Wm. Little, Westmount; Mgr. Laflamme, E. G. Joly de Lotbiniere, W. C. J. Hall, J. C. Langelier, H. M. Price, J. Obalski, Hon. P. E. Leblanc, W. . Power, S. P. Grogan, Chevalier Bail-airge, J. Champoux, Henry O'Sullivan, Hon. R. Turner, M. Savard, M. L'Heureux, F. M. Duggan, J. W. Hamilton, of Quebec; J. T. Bertrand, Isle Verte; J. G. Jardine, Vancouver; George Y. Chown, Queen's College, Kingston; Senator H. Bostock, Monte Creek, B.C.; F. W. Jones, Golden, B.C.; James Leamy, New Westminster, B.C.; G. C. Wilgress, Huntsville, Ont.; Dr. C. A. Schenck, Biltmore, N.C.; A. E. Alexander, Campbellton, N.B.; Col. T. G. Loggie, Fredericton, N.B.; E. J. Zavitz, Guelph, Ont.; Prof. Filibert Roth, Ann Arbor, Mich.; Angus McLean, Buffalo; — Rothwell, Berlin Falls, N.H.; David Gillies, M.P.P., Carleton Place, Ont.; Hiram A. Calvin, M.P., Kingston; M. H. Boyd, Bobcaygeon; W. K. Trower, Hawkesbury, Ont.; A. P. Stevenson, Nelson, Man.; Prof. Knechtel, New York. Rev. T. W. Fyles, Levis.

The secretary, R. H. Campbell, Ottawa, read the minutes of the last annual meeting, and presented the report of the board of directors, as follows:

REPORT OF THE DIRECTORS.

In their annual report the board of directors acknowledged its indebtedness to the Government Printing Bureau for providing for the printing of the last nnual report through the Forestry Branch of the Department of the Interior.

The following were appointed as vice-presidents for the year:—Ontario, Hon. E. J. Davis; Quebec, Hon. S. N. Parent; New Brunswick, His Honor J. B. Snowball, Lieutenant-Governor; Nova Scotia, Hon. J. W. Longley; Prince Edward Island, Rev. A. E. Burke; Manitoba, Major Stewart Mulvey; Assiniboia, His Honor A. E. Forget, Lieut.-Governor of the North-West Territories; Alberta, Wm. Pearce, Calgary; Athabasca, F. D. Wilson, Fort Vermilion; British Columbia, Hon. Hewitt Bostock; Keewatin, the Lieut.-Governor of Manitoba.

The directors referred to the loss sustained by the society in the death of John Bertram, of Toronto, one of its members who had taken a deep and intelligent interest in forestry. Among other members who died during the year were Dr. W. H. Muldrew, of Guelph; W. C. Caldwell, M.P.P., of Lanark; and Colonel Thos. Higginson, of Vankleek Hill, the value of whose work was well appreciated. Sympathetic reference was also made to the bereavement of His Honor Sir Henri Joly de Lotbiniere, and family, in the loss they sustained by the death of Lady Joly de Lotbiniere.

The secretary reported that the efforts to increase the membership had been fairly successful. The membership stands as follows:—

	1904.	1905.
Nova Scotia	14	21
New Brunswick	14	22
Prince Edward Island	1	3
Quebec	98	113
Ontario	134	187
Manitoba	80	72
Assiniboia	23	22
Saskatchewan	3	4
Alberta	60	42
British Columbia	25	32
Newfoundland	..	1
United States America	24	32
England	2	5
Ireland	..	1

	1904.	1905.
India	..	1
Honolulu	..	1
Germany	1	1
Denmark	..	1
Austria	..	1
	479	562
Life members	33	39

The receipts were $1,845.77 for last year, and the expenditure $930.66, leaving a balance of $915.11. The amount now standing to the credit of the Association is $989.75, but against this is the account for the Forestry Journal for January, amounting to $150, and the expense of this meeting about $100. The Governments of Ontario, Quebec, and British Columbia were again thanked for grants towards the work of the Association.

In accordance with the decision of the last convention, the first number of the official organ, "The Canadian Forestry Journal," was issued in January, the Rolla L. Crain Company, of Ottawa, having the printing contract for one year. Dr. Wm. Saunders, Professor John Macoun, and E. Stewart, were appointed provisionally an Editorial Committee, and R. H. Campbell, editor and business manager. The intention is to issue quarterly for the present. The board looks to members for assistance in making the magazine thoroughly representative. The question of supplementing work of the Journal by the publication of bulletins to the public press, might be referred to a special committee.

The Forestry and Colonization Commission of Quebec has submitted its report to the Government of that province. This report is clear, and evidently the result of a careful weighing of the evidence submitted by persons interested in all sides of the questions. Some of the conclusions of the commission in general are: That there is no antagonism between the holders of timber licenses and real settlers, or those who honestly take up public lands with the view of clearing them and no of speculating in the timber. That th number of speculators in Governmen lots and in timber, already very considerable, is constantly on the increase These interlopers are the scourge o colonization, a subject of continua trouble and, on occasion, of seriou losses to the license holders and th Government. The extraordinary increased value, which all woods have attained within four or five years, ha caused this practice to spring up in al parts of the Province, and the operation have assumed proportions which hav become almost a menace to th legitimately conducted lumber industry. The first measure necessary in the division of the public domain into settlement lands an merchantable timber lands. There is a great deal of land unsuited for profitable cultivation as much by the nature as by the conformation of the soil, bu very richly timbered. It would, therefore, be in the interest of the Province to form these lands into forest reserves

That the system of protection agains forest fires is insufficient and requires an increase in the number and an improvement in the personnel of the fire ranging staff. Further restrictions as to the time and methods of setting out of fires are recommended.

The Forestry Commission of Prince Edward Island presented its report at the last session of the Legislature. The commissioners state that as almost the whole of the land in that Province is held by private owners, it is evident that practical forestry must in the main be dependent for its success on private effort. This effort should be directed and encouraged in every possible way, and it is in such direction and encouragement, the Commissioners consider, the Government can best, and with least expense, bring about the re-foresting of such parts of the Province as have been denuded, can assist in preserving the forests which still exist, and can incidentally do much to beautify the appearance of the Island. The Commissioners ecommend that experiments might be nade in planting on the white sand arrens, that the planting of trees on rms should be encouraged for the proection they afford to orchards and rops, and for the supply of firewood nd timber, that planting should be one along the public roads, and that hrough the schools education should be iven in regard to the value and the are of trees.

The resolution passed at the last anual meeting recommending the proibition of fires for clearing in the rovince of Quebec, except from the 5th June to the 31st August, was transitted to the Government of that rovince, and that urging protection of e watersheds was sent to the different overnments throughout the Dominion. he resolution relating to the prevenion of fires along lines of railway and specially in the construction of the new rans-continental road was transmitted o the Dominion Government and to he representatives of the railway comanies. Replies were received from the epartment of Railways and Canals, and rom the General Manager of the Grand runk Pacific Railway Company, stating hat steps would be taken in the direction ndicated by the resolution. As this is a uestion of the utmost importance and rgency, the Association may well reffirm its attitude thereon. Forest fires re still causing destruction in Canada lthough their extent has been largely ontrolled by the fire ranging system ow generally adopted throughout the ominion. British Columbia, has, outide of the Railway Belt, which is proected by Dominion fire rangers, suffered he most severely, as the season was dry hroughout, and that Province has unortunately, in spite of its great forest ealth, not provided for a fire-ranging orce such as has proved effective in ther parts of Canada. In Nova Scotia, e Fire Warden Service, established nder the Act passed at the last session f the Legislature, has proved successl in the counties in which the system s inaugurated. The report of the Crown Lands Department shows that numerous fires were prevented or extinguished in their incipiency, and the loss in many counties, large in previous years, has been reduced to a minimum. Under Dominion jurisdiction, there were forty fire-rangers employed, and the result was that there was little destruction by forest fires except in the Crow's Nest Pass where there was great difficulty in controlling them. The success in the railway belt in British Columbia in preventing loss, was most marked, and to show how the cost of fire-ranging service is saved over and over again in the value of the timber protected, it will be permissible to quote from a letter received by the Dominion Forestry Branch from the Columbia River Lumber Company as follows: "We feel satisfied that without the fire-ranging system and the extra work which was done in the last six weeks, practically all the timber tributary to Shuswap Lake would have been destroyed and, as you know, this amounts to a good many hundred of millions of feet."

The tree planting scheme under federal management in Manitoba and the North-West Territories continues to develop. During the year 1904, 1,800,000 trees were distributed to 1,027 settlers, an average to each of 1,752 trees. In 1905 the distribution will be 2,000,000 trees to 1,120 settlers. The Forestry Branch has so far sent out about 5,000,000 trees and 2,000 lbs. of tree seed. Educational work in this connection is being done by addresses at the meetings of Farmers' Institutes, and a forestry exhibit was shown at the Dominion Exhibition at Winnipeg. In Ontario a beginning has been made in the setting out of a nursery at the Ontario Agricultural College at Guelph, from which the farmers of that Province may obtain supplies of forest trees for planting. Lectures on Forestry at Farmers' Institutes and gatherings of a similar nature will be given to explain the plans of the Government and furnish general information on the management of trees.

The report closed with a complimentary reference to the forestry congress at Washington, and to the interest taken in the work of the Association by Earl Grey, who had become its patron. The press and railway men were also thanked for their interest.

James Leamy, the Dominion Crown Timber Agent for British Columbia, gave an instructive account of the fire-ranging system inaugurated in that Province. There were eight fire-rangers in the "Railway Belt," a tract of 25,000 square miles, but while the work of the rangers had resulted in saving the forests from destruction in a number of cases, their efforts were nullified by the apathy of local authorities. It was difficult to secure conviction of persons setting fire to the woods, and in one case in which a conviction was obtained the magistrate let the convicted man off with a fine of less than half the minimum prescribed by the law. In another case a Swede, in order to clear a piece of ground to plant a potato patch, started a fire which destroyed a million dollars' worth of timber.

Senator Bostock suggested that in order to dissipate popular ignorance on this subject instructions should be given in the public schools on the care of forests and on the peculiar value of our forest resources.

F. W. Jones, of the Columbia River Lumber Co., of Golden, B.C., said his company was so convinced of the importance of fire prevention that it would be willing to contribute a portion of the cost of a good fire-ranging service. The Government regulations should be so framed as to provide for the proper administration of timber lands, and to see that the crime of wilfully destroying property of such incalculable value should be visited with something more than a nominal fine. Dealing with squatters was a problem that Government should take in hand. A timber limit company had the right to evict a squatter from its lands, but few companies cared to invoke the aid of the sheriff and rifle in such cases, the opportunities for private revenge being too great in these wild tracts.

Robert Jardine, of the British Columbia Mills, Timber and Trading Co., of Vancouver, commented on the differences between the administration o the Railway Belt and the other lands owned by the Province, which were suffering owing to lack of a practica timber land policy and to failure to provide fire protection.

Mr. Stewart, Superintendent of Forestry, Ottawa, said he had recommende a general Act of the Dominion Parliament providing for the administratio of forest reserves, so that when an tract of timber land was proclaimed a forest reserve it would come automatically under the provisions of the Act.

Dr. Schenck, of the Biltmore Fores School of North Carolina, said he believed in a business forestry policy, an the first step in a rational plan of fores reservation was to determine wha areas would be most profitable as fores lands, and what should be set aside fo agriculture. These lands set aside a forest reserves should be owned absolutely by Government, and not by private individuals.

Dr. Filibert Roth, of Ann Arbor, Professor of Forestry for Michigan, sai the State was the only good forester, a history showed. Many States of th American Union were now beginning t appreciate the importance of forest development. In the Eastern State within the past forty years several millions of acres that had formerly bee devoted to agriculture had been turne into forest reserves, and in the West, i Dakota, Minnesota, Michigan and othe States, public policy was taking th same trend.

At the afternoon session the Committee on Resolutions was nominate as follows: E. Stewart, E. G. Joly d Lotbiniere, R. H. Campbell, F. W Jones, T. G. Loggie, H. M. Price, an the president.

Rev. T. W. Fyles, of Levis, Q., rea a most instructive paper on "Fores Insects," illustrated by drawings of various tree-destroying insects and thei larvæ, and giving an account of thei habits, etc. We hope to publish an ab tract of this paper in another issue.

The treasurer, Norman M. Ross, read he financial statement, which showed re-eipts of $502 from membership fees, rants of $300 from Ontario, $200 from)uebec, and $100 from British Columbia, aking with other receipts, $1,845.77. mong the items of expense were $420 to he Rod & Gun Publishing Co., com-leting the old arrangement for publish-ng reports, $160 for printing and station-ry, $162 for travelling expenses, and $152 or salaries.

The president, in his annual address, ongratulated the Association on meeting n the interesting old city of Quebec, the ursery of all that was great in explor-tion, in missionary effort, and in martial nterprise. The first timber regulations, or example, of any government of the ontinent were promulgated here, and it vas worthy of note that the same prob-ems of settlers' rights were as prominent n these regulations, in force 300 years go, as they were to-day. He also re-alled the fact that the convention of the merican Forestry Association in 1890 vas held in this city, and no doubt paved he way for the future Canadian Asso-iation. Nothing was done in the direc-ion of organization, however, till 1900, when Mr. Stewart, of Ottawa, took the vork in hand and the present Association ame into being. Reforesting, fire rang-ng and the preservation of woods at the ources of our rivers were subjects that ad been brought so forcibly before the ublic that a body of opinion was already aking shape. The lumbermen themselves were coming to the aid of the Association n seeking to build up a sound forestry policy, while fire ranging for the preven-ion of those desolating forest fires was already carried out in nearly every province. The problem of keeping settlers out of lands that are only suited for timber growing was a difficult one, as conflicting interests had to be satisfied; but he hoped a resolution would be passed on the subject at this convention. The building of the new transcontinental railway was a great occasion for impressing on legislators and railway men alike the importance of fire prevention when building through forest regions. Railway building had been responsible for enormous destruction of timber in the past, but the fact that by proper precautions the Temiskaming Railway work had been carried out all last year, under Government control, without a single destructive fire was an object lesson as to what might be accomplished by care and a rational appreciation of the value of timber. Fire rangers had traversed the line on railway bicycles, and through their oversight not ten cents' worth of timber was wantonly lost. It was gratifying to note that our Provincial Governments were becoming alive to the duty of creating forest reserves for the preservation and regulation of our water supplies as well as for the preservation of our fish and game. Already Ontario had 7,195,000 acres in round numbers of these reserves; Manitoba, 3,449,000 acres; North-West Territories, 5,612,000 acres; Quebec, 1,700,000 acres; British Columbia, 624,000 acres, and the Dominion Government, 9,686,000, making nearly 19,000,000 acres in all, and no doubt these would soon be increased as their value became recognized.

A paper on "Fires in British Columbia in 1904," prepared by the secretary, from data furnished by J. R. Anderson, Deputy Minister of Agriculture of British Columbia, was read by Roland D. Craig, of Ottawa. The fires in that Province last year were very severe owing to the dry season. In some districts the smoke was so dense that surveying operations could not be carried on. The direct loss was large and its effect on the mining industry through the destruction of wood supplies would soon be felt. The revenue from the provincial forests in 1904 was $446,276, against $347,004 in 1903. The virgin forest timber was still great, and if properly administered they should make British Columbia the richest member of the Confederation. The revenue from this source would soon reach $1,000,000, and this sum capitalized should provide such a fund for fire protection as would make the insurance a cheap one. In the New Westminster district the loss by forest fires last year was about $500,000, these fires probably being caused by the carelessness of prospectors. Some fires of minor extent were caused by persons clearing land. In southern Vancouver Island, the railways were responsible for a share of fires, one having been started from the sparks of a locomotive used for hauling out timber. In the Atlin and Cariboo districts numerous small fires were caused by campers, prospectors, Chinese and Indians, the latter being proverbially careless. The Lillooet district suffered severely, the fires being the worst since 1869. Although the loss was almost incalculable, and three white men were brought before justices of the peace, the agent states that he was unable to secure a conviction though he believes they were the perpetrators of dangerous fires. In the valley of the Fraser River the Indian sets destructive fires in carrying out his time-honored custom of "lighting the salmon on their way up the river." A great, but undetermined, extent of land was burnt over in the Yale district towards the international boundary. The most serious of the fires around Eholt was reported to be caused by the men clearing the right of way of the Great Northern Railway from Grand Forks to Phœnix.

The next paper was that by Col. T. G. Loggie, of the Crown Lands Office, Fredericton, on the forests of New Brunswick. It will be found elsewhere in this issue. In reply to a question, Mr. Loggie said that Mr. Gibson's limits of 225,000 acres were cut over to the extent of 25,000,000 superficial feet per year, the operations being limited to trees that would furnish logs 18 feet long and 10 inches in diameter at the small end. It was found that where the trees were thinned out in this way the forests replenished themselves in ten years. The Crown Lands Department of New Brunswick had authority to spend $2,000 a year in fire prevention but this was not enough.

Dr. Clark, Chief Forester of Ontario, commenting on the stumpage regulations, thought that the ground rent of timber limits should be kept low, and any increase in revenue required by a Government should be obtained by an increase in stumpage. If the ground rent were fixed high, it was a temptation to timber limit holders to strip the land and then get out.

Dr. Schenck said timber lands were generally overtaxed in the United States. It was calculated that on the basis of reproduction of trees in eighty years 80 per cent. of the value of the forests was consumed in taxes. He would warn Canadian Governments against taxing forest lands to death.

Mr. Stewart thought the growth of spruce referred to by Mr. Loggie was exceptional. Sir Henri Joly de Lotbiniere estimated that on average lands in Quebec spruce would grow one inch on each side in ten years. Governor Snowball had said, however, that in New Brunswick in some districts this class of wood grew one inch in a year. A sample had been exhibited showing a growth of three-quarters of an inch in a season. He attributed this difference to the great amount of moisture in the air in northern New Brnuswick.

E. G. Joly de Lotbiniere, referring to the cutting of spruce limits, remarked that pulp-wood was the curse of forestry in the Province of Quebec. There were no proper diameter restrictions, and land was being stripped and whole areas ruined by reckless cutting. No timber under 11 inches on the stump should be allowed to be cut off Crown lands. Black spruce is now cut down to 8 inches diameter and less. The present pulp-wood regulations and Crown lands policy might be likened to an attempt at colonizing a country by starting out to cut every child's throat.

Mr. Little, Westmount, observed, on the point of the productive capacity of spruce, that in the Adirondacks the ordinary yield was 3,000 feet to the acre, and 5,000 feet was considered very heavy. In the Province few spruce of 18 inches diameter were less than 100 to 150 years of age.

Dr. Robert Bell, of the Geological Survey, Ottawa, said he had travelled as far west as the Rocky Mountains and as far north as trees grow, and he appreciated the enormous wealth of Canada in forest trees. There were in the whole of the American continent 340 species of trees, of which 120 species were to be found in Canada. This was remarkable when compared with the European continent, which had only thirty species of indigenous trees, or with Great Britain, which had but seven or eight. Many trees of Canada had not yet reached the northern limit of their growth. There was a great difference in the rate at which trees extended the area of their growth, some, such as the birch and poplar, whose downy seeds were carried on the wind, being capable of spreading themselves a hundred miles or more in a year; while others, such as nut-bearing trees like the hickory and walnut, extended their limits only as far in a season as squirrels might carry the nuts. The process of nature may be greatly helped by man, however, and the walnut, hickory and many other varieties may be grown hundreds of miles north of their present limits in Quebec and Ontario. Certain trees do well in particular soils or situations, and hence we find that the Banksian or Jack pine, which thrives best in moist regions, grows much farther north along the coast of Labrador than in the higher and drier regions of the same latitude farther inland. Going north of the Great Lakes certain trees disappear on the Height of Land, and were supposed to have gone to the extreme northern limit of their natural growth, yet it is found that north of this ridge these trees again make their appearance, and in some cases extend down to the shores of James Bay or Hudson Bay. The Banksian pine is a Canadian tree, being practically confined to the territory of the Dominion. The seeds of this tree are expanded for germination only under the action of extreme heat, a fact which appears to show that forest fires have prevailed periodically for all time, and from which we may infer that lightning and meteors were the agency of setting forest fires before the advent of the Indian. He had himself seen fires raging in northern districts where he knew no Indians had ever been. As to the longevity of spruce the white variety lives to 100 or 120 years, and the black spruce to 150 years. As to the importance of dealing with forest insects, he mentioned that the saw-fly, which was brought over to New York in a ship, had spread over the whole of the Labrador peninsula, and in the last ten years had destroyed perhaps a score of millions of dollars worth of tamarac trees.

Before adjournment the secretary read a telegram from Senator Edwards, of Ottawa, informing the convention that Sir Wilfrid Laurier had expressed a desire that the association should hold a session in Ottawa during the coming summer, and intimating that the Government would aid in the expenses of the convention. The news was greeted with applause, and it was decided to send a message of thanks for the invitation.

Upon the opening of the convention on Friday morning the paper by Hon. J. W. Longley was called for.

The paper, "Forestry in Nova Scotia," by Hon. J. W. Longley, was read by Mr. Campbell, in the absence of the author. Mr. Longley said that in former years the Nova Scotia Government granted outright to lumbermen land for lumbering purposes at 40 cents per acre, the grant being conveyed in fee simple. The larger number of the large lumbering concerns of Nova Scotia, such as Davison's, Alfred Dickie, the N. S. Lumbering Co., St. Margaret's Bay Co., Pickles & Mills, Clarke Bros., Benjamin, and others, are carrying on operations on lands formerly obtained by these absolute grants. This system was terminated in 1899, when it was provided that timber lands could be leased for 20 years at 40 cents, on which no timber could be cut less than 10-in. diameter. In the case of pulp lands, timber could be cut down to 6-in. diameter on payment of 50 cents per acre. In 1904 the price of these leases was raised to 80 cents per acre for timber purposes and $1 per acre for pulp-wood purposes. The timber lands of Nova Scotia are good, and numerous lakes and streams are favorable to getting out wood. The large lumbermen usually cut only the large wood and to such an extent as will enable them to go over it again in ten or twelve years without diminishing the growth of the forest. The great drawback is the forest fire, and the problem is the prevention of these. An act to prevent forest fires was passed in 1883, but as no machinery was provided to enforce it, nothing has been accomplished. Last year an act was passed providing for chief fire rangers and sub-rangers, the former to be paid by the Government, and the latter by the municipalities out of a fund created by a tax of ¼ of 1 per cent. per acre on holders of all timber lands of 1,000 acres or more. The act has been put into operation in Annapolis, Digby, Clare, Yarmouth, Shelburne, Queen's, Lunenburg, Colchester, and Pictou, and works well. Although last season was a very dry one, no fires of consequence occurred in municipalities where chief rangers were appointed. The act provides that no bush fires shall be lighted without notice to the ranger. Reforestation is engaging the attention of the Government, but no scheme has yet been formulated. It is under consideration to reserve tracts at the head of navigable waters. The ungranted lands of the province amount to 1,516,631 acres, and the extent of lands granted or leased amounts to nearly as much.

This was followed by the paper on the "Forest Resources of Quebec," by J. C. Langelier, chief of the forest rangers of Quebec. Mr. Langelier's paper will be found in another part of this issue. The author was highly complimented on the comprehensive character of his paper, and the thoroughness with which he had gone into every phase of his subject.

Wm. Little, of Westmount, followed with a paper on forest fires, showing the care taken to prevent fires in European forests as contrasted with the utter lack of care in Canada. He showed by statistics that there were more fires in the single Province of Quebec in one year than there were in the whole of Europe in a quarter of a century. Mr. Little's paper will be dealt within another issue.

Resolutions.

The following was the substance of the report of the Committee on Resolutions:

That the Association respectfully call the attention of the British Columbia Government to the necessity of establishing a system of fire ranging for the preservation of the forest areas of the Province, whereever railway lines or settlements extend. The experience of Ontario and other Eastern Provinces, and in the Dominion "railway belt" in British Columbia, indicates clearly that the benefits to be derived from an efficient fire ranging system yield a magnificent return on the comparatively small expense. Co-operation between the Government and railways operating in the Province was also recommended in guarding against forest fires, and it was suggested that the railways be required to clear the right-of-way of inflammable material.

That in view of the difficulty of dealing with cases of fires started for the clearing of land and for other purposes, it is also suggested to the Government of British Columbia that the Bush Fires Act should be so amended as to prohibit the starting of fire, except for cooking, between May 1st and November 1st, unless by special permit from the forest ranger; that permits for the clearing of land by fire shall be issued only after inspection by the ranger or other officer, and that the ranger be clothed with the authority of a constable.

A resolution on the same lines was commended to the Government of New Brunswick, excepting that the dates were changed from May 1st to December 1st.

A resolution commended the work done by the Dominion and Provincial Governments in establishing forest reserves, and urged the extension of these reserves, and the more thorough exploration of the public domain, with a view to separating the agricultural lands from those best suited for the production of timber.

It having been represented to the Association that a large part of the right-of-way of the Intercolonial Railway running through New Brunswick is not cleared of young growth and other combustible material, as provided by the New Brunswick Fire Act, of 1885, it was resolved to ask the Minister of Railways to take steps to have the right-of-way cleared.

That the Association having learned with pleasure, through a telegram from Senator Edwards, that the Premier of Canada has expressed his desire for a forestry convention in Ottawa during the coming summer, the executive was authorized to confer with the Hon. Premier with a view of holding this convention.

These resolutions were adopted, and the convention reaffirmed the resolution of the last annual meeting calling attention to the dangers of fire along the new transcontinental railway, and asking that contractors as well as Government and railway officers engaged on construction should bind themselves to prevent fires.

It was decided to leave the question of the place of the next annual convention to be decided by the Executive.

Votes of thanks were passed to the railway companies, to the city council, the Garrison Club, the Quebec Literary and Historical Society, to the Press and to the Quebec members for courtesies and hospitalities; also to the Ontario, Quebec and British Columbia Governments for their grants of money.

The afternoon was spent pleasantly in a trip over the Quebec Railway Light and Power Co.'s line to Montmorency Falls, where refreshments were served in the old "Kent House," the residence of the Duke of Kent, Queen Victoria's father, during his stay in Quebec.

In the evening interesting public addresses, illustrated by lantern slide pictures, were given by Dr. Judson Clark, of Toronto, on the "Forest as a National Resource," and by W. H. F. Addison, late of the Yale Forest School, now of Toronto University, on "A Forest School."

After the lectures the election of officers took place at the Hotel Frontenac, and resulted as follows:

Patron—His Excellency Earl Grey.

Honorary president—Aubrey White, Assistant Commissioner of Crown Lands of Ontario.

President—E. G. Joly de Lotbiniere, Quebec.

Vice-president—E. Stewart, Superintendent of Forestry, Ottawa.

Secretary-treasurer—R. H. Campbell, Timber and Mines Branch, Department of Interior, Ottawa.

Board of Directors—Thos. Southworth, Director of Forestry of Ontario, Toronto; Dr. Wm. Saunders, Director of Experimental Farms, Ottawa; Dr. Robt. Bell, Director Geological Survey, Ottawa; John R. Booth, lumber merchant, Ottawa; Hiram Robinson, Hawkesbury Lumbering Co., Hawkesbury, Ont.; H. M. Price, president Quebec Pulp-wood Association, Quebec; Mgr. Laflamme, Laval University, Quebec.

Provincial Vice-presidents—Prince Edward Island, Rev. A. E. Burke, Alberton; Nova Scotia, Hon. J. W. Longley, Commissioner Crown Lands, Halifax; New Brunswick, His Honor J. B. Snowball, Chatham; Quebec, Hon. S. N. Parent, Quebec; Ontario, Commissioner of Crown Lands; Manitoba, Hon. J. H. Agnew, Winnipeg; British Columbia, Hon. H. Bostock, Monte Creek; Alberta, Wm. Pearce, Calgary; Assiniboia, His Honor A. E. Forget, Regina; Athabasca, F. D. Wilson, Fort Vermilion; Keewatin, Lieutenant-Governor of Manitoba.

The Dinner.

The first annual dinner of the association was held at the Hotel Frontenac on Thursday evening, the hosts being the Quebec members of the association, whose hospitality in this and other matters was highly praised by the visiting members. The president occupied the chair.

After the toast of the King the chairman proposed the "Dominion Forestry Department," and said that the forest wealth was next to that of agriculture, and its preservation was the only means we could look to for postponing the day of direct taxation.

Mr. Stewart in reply referred to the first efforts of Mr. Little and others, as far back as 1882, to interest the public in forest preservation. In 1899 it occurred to him to gather Canadians interested in the subject, and from the small beginning made in the following year the movement had grown till they now had the best minds of the country in sympathy with them. The chief objects of the association and of the forestry bureau were the preservation of existing forests and the creation of new forests in treeless sections of the country. The forestry bureau had sent out to Manitoba and the Territories 3,000,000 trees in the first two years and 2,000,000 more last year to about 2,300 settlers, who reported that about 85 per cent. of the trees planted were growing.

The "Provincial Forestry Departments" was replied to by Senator Bostock, Col. Loggie, W. C. J. Hall, and Dr. Clark. Senator Bostock, for British Columbia, regretted his Province had not yet taken up the systematic management of its forests, but expected it would soon do so. Col. Loggie, on behalf of New Brunswick, said that the forests of his Province were practically the only source of Provincial revenue, but strange that, though three-fourths of the Province was in forests, the subject of their preservation and regulation had not been taken up practically as it should be. Mr. Hall, replying for Quebec, referred to the enormous resources of the Province, which had 65,000 square miles under license, and 100,000 square miles of solid timber lands untouched. Then there were the colossal water powers, unrivalled by any country in the world. These required only capital to develop; but we should remember that to maintain the efficiency of these powers we had to protect the forests in the rear. Dr. Clark, representing Ontario, said each Province should frame its forest policy to suit its local conditions, and not be mere imitators of other countries, whose circumstances were different. It would be impossible, for example, to adopt the details of a Germany forest policy, where the wages of expert tree planters were 34 cents a day (the planters boarding themselves out of this), while $1.50 a day was paid in the Adirondacks to tree planters, and poor hands at that. It would be the policy in Ontario to educate the farmers in tree-planting, and to extend the forest reserves so as to include rough lands not adapted to agriculture.

The toast of "Our Educational Institutions" was replied to by Monsignor Laflamme, of Laval University, and Rev. T. W. Fyles, of Levis. Mgr. Laflamme urged the formation of a school of forestry for Quebec, and explained how vital the subject was to the material welfare of the Province. Referring humorously to Mr. Fyles' paper on forest insects, he said there were three kinds of bugs affecting the forests of which no mention was made in that excellent paper. One of these bugs was the Ignorantia Vulgaris, another was the Indifferentia Communis, and the third was the Influentia Politica. It might be possible to deal with the first two species by scientific forestry, but when we came to the third —. (Laughter).

"The Pioneer Forestry Association of America and its President and Members" was replied to by Prof. Roth and Dr. Schenck. The former referred to Mr. Little and his father as the parents and nestors of forestry on this continent, the American Forestry Association having, in fact, been born in Montreal. He also mentioned the pioneer work of Mr. Tache and Sir Henri Joly de Lotbiniere. In the United States the forestry movement had so far progressed that the forest reserves had begun to be self-supporting. Massachusetts, Connecticut, Wisconsin, Minnesota, California and Dakota were among the States that had created forestry departments within the past year or two, and some of these and other States were carrying out special experiments. Dr. Schenck made a plea for practical forestry, and told of the work on the Biltmore estates, founded by Vanderbilt in North Carolina. While the principles of forestry were the same in all countries, their application must differ according to situation.

After the toast of the "Press" Mr. Joly de Lotbiniere proposed the health of the chairman.

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J. C. Langelier.

J. C. Langelier, chief of the forest ranging service of Quebec, was born at Ste. Rosalie, County of Bagot, in 1845, and was educated at the college of St. Hyacinthe. After taking a classical course, he studied law at Laval and Victoria Universities, and was admitted to the bar of Quebec but never practised. Taking up journalism, he edited the Courrier de St. Hyacinthe, La Nation, and Le Canadien in succession, and was also a frequent contributor to L'Electeur, Le Soleil, and other papers. Besides this work, he was a prolific writer of pamphlets and sketches dealing with agriculture, colonization, railways, public works, and generally with the resources of Canada. Among these were a general sketch of the Province of Quebec, prepared during the administration of Hon. H. Mercier, a pamphlet on Gaspesia, the Lake St. John district, and the James Bay region. The first named is still regarded as the most comprehensive description of the Province ever published, and was reprinted in "Canada; a Memorial Volume." Mr. Langelier has well earned the name he is popularly known by, "the Walking Cyclopædia," of information on the resources and geography of Quebec. His reputation is the natural result of abounding energy and painstaking industry. Though a man of commanding presence and enormous capacity for hard work, he is modest and gentle in his nature, and without the consuming ambition that eats into the life of so many. From 1887 to 1892, he was Deputy Provincial Registrar, and while occupying this important position, he compiled the "Description of the Surveyed Townships of the Province of Quebec," which is one of the most useful of the official blue-books of the Province, embracing information regarding all the surveys and explorations made there down to 1890. In 1897 he was appointed Superintendent of the Forest Rangers of the Province, and in that capacity has displayed his usual ability and activity, besides carrying out a number of needed reforms. For the last twelve or fifteen years, he has carried on a regular campaign in the press in favor of the pulp and paper industry. The Star, in Montreal, and Le Soleil, in Quebec, published many articles from his pen, and his report on the Lake St. John country, published in the report of the Commissioner of Crown Lands for 1898, brought the attention of capitalists to that vast region, where pulp-wood and water-powers are to be found in all directions. Several companies were organized to avail themselves of those opportunities and several mills were built. In other reports, he made known the water-powers of the Outardis and Manicouagan rivers, on the north shore of the St. Lawrence, below the Saguenay, and those of the Magdalen river, on the south shore. He has also published in Le Soleil, the most complete sketch of Abitibi territory, annexed to the Province of Quebec in 1898, and in which water-powers from 50,000 to 453,-

000-h.p. are found by the score. As secretary of the Colonization Commission, appointed by the Quebec Provincial Government, he collected most valuable evidence concerning the pulp industry and its requirements, and in this respect the letters of J. R. Booth, of Ottawa; John E. Vallilee, of Buckingham, and the evidence of E. A. Dubuc, manager of the Chicoutimi Pulp Co.; of Wm. Price, head of the famous firm of Price Bros. Co.; of F. P. Buck, president of the Royal Paper Mills Co., should be read by all those who take an interest in this industry. From all that evidence, Mr. Langelier drew the conclusions which are printed in the report of the Commissioners. He is now devoting all his energy to the success of the Quebec and Lake Huron Railway, destined to make available many large water-powers between Quebec and the river Ottawa, and thus impart a potent impetus to the pulp and paper industry. By this new, short route, pulp can be delivered to the paper manufacturers of Wisconsin, Indiana and the north of New York at prices which will puzzle the pulp makers of the Eastern States, the cost of transportation being reduced to a minimum, as the products of the mills to be erected would go as return or west-bound freight for the railroad and steamers bringing grain to French River. This realization of this project will of necessity give a powerful impetus to the pulp industry in northern Ontario, as well as in Quebec. Mr. Langelier is a brother of Hon. Francois Langelier, prominent for many years in the political life of Quebec, as a member of the Provincial Assembly and the House of Commons, and as a Cabinet Minister, and who is now Judge of the Quebec Superior Court. Another brother equally prominent in public life is Hon. Charles Langelier, former Provincial Secretary, and now Sheriff of Quebec.

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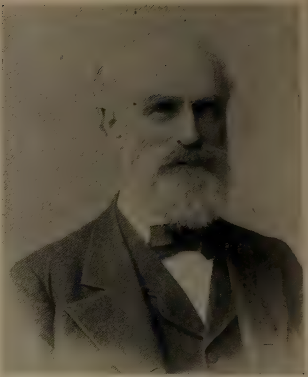
The rebuilding of the Canada Paper Company's soda pulp mill has now been completed, and the company is again making their own soda pulp. The company increased their output last year by over 5,000 tons.



Wm. Little.

It is worthy of record that the fathers of the American Forestry Congress were Canadians, and that the first meeting at which that Association took definite shape, was held on Canadian territory. This was in Montreal, in August, 1882, a preliminary meeting having been held in Cincinnati, in April of the same year. This congress, which was the outgrowth of the American Forestry Association started in 1875, was due in a large measure to the pioneer preaching of Wm. Little, of Westmount, Montreal, who, along with his father, the late James Little, had been for years advocating the policy of forest conservation for the American continent, and who had been warning the Government and politicians of the folly of the wanton destruction of forests then going on. At the Montreal convention, Mr. Little, who had provided rooms christened the "Forestry Chambers," was elected vice-president, and among other Canadians who had taken part in the formation of the American Association were Prof. Wm. Saunders, now Director of Experimental Farms, Ottawa; E. E. Tache, assistant Commissioner of Crown Lands of Quebec; D. W. Beadle, St. Catharines; Sir Henri Joly de Lotbiniere (who was first chairman of the convention); Prof. Wm. Brown, of Guelph; Dr. A. Eby, of Sebringville, Ont.; Dr. J. B. Hurlburt, Ottawa; John Dougall, (father of Mr. Dougall of the Montreal Witness); Rev. T. W. Fyles, then of Cowansville, Que; Dr. Reginald A. King, Compton, Que., and others.

At this congress, two resolutions, among others, were passed. One recognized the work of James Little, "the Nestor of American Forestry," for his work from an early period in diffusing knowledge on the dangers threatening our timber supplies, and in helping to form public opinion on this question. The other was in recognition of the energy and self-sacrifice of Wm. Little in preparing for the meeting and making it a success. The recording secretary appended a foot note to the proceedings of the congress in which he mentioned that Mr. Little had furnished the "Forestry Chambers" at his own expense, and not only did all the printing for the meetings, but hired the Queen's Hall for two evenings, and paid for the publication of the report in two special numbers of the Montreal Herald. One can realize the inertia that had to be overcome in the formation of public opinion on this subject—now admitted to be of such transcendent importance—when the newspapers of the day had to be paid for giving a full report of the proceedings, as if they were so much advertising matter. Mr. Little was, of course, one of the fathers of the Canadian Forestry Association, and must now be conscious of the honors of a prophet, when he realizes that the best intellects of both countries are now working out the problems in the presentment of which he was at first like a lone voice crying in the wilderness.

Ottawa Opinion of Pulp=wood Policy.

At the annual meeting of the Ottawa Board of Trade, the president, Dennis Murphy, in his inaugural address, paid special attention to the pulp-wood policy.

"Pulp-wood," he reasoned, "is the rawest of raw material, and the labor employed in cutting it and transporting it from the stump to the cars or boats on which it is loaded is not skilled, and those employed in this work may be termed the hewers of wood, if not drawers of water, for the great pulp and paper mills of the United States, in which skilled labor of a high quality is largely employed.

"The pulp-wood industry of Canada has grown from year to year, until now our annual exports to the United States have reached in value the sum of two million of dollars. The tariff of the United States is framed with the idea of encouraging this country to export this raw material of pulp-wood, but to seriously discourage the exportation of the manufactured article, paper, and the partly manufactured article, wood-pulp and wood fibre. While there is no duty on pulp-wood entering the United States, on mechanical or ground pulp there is a duty of $1.67 per ton, on chemical pulp a duty of $3.33 per ton, and on paper, which is finally the manufactured product, the duty is much higher.

"If the pulp-wood which is now exported from Canada were manufactured into paper before leaving the country, it would mean the establishment of about twenty-five new paper mills, each having the capacity of the establishment of the E. B. Eddy Company's, with new ones added each year, and the payment in wages and supplies of at least 16 to 18 millions of dollars per annum, or eight times the amount expended in the production of pulp-wood, besides the initial cost of establishing manufactories. It does not seem right or patriotic to allow this large and increasing quantity of raw material to go from the country year after year, a quantity nearly equal in measurement to the whole cut of logs on the Ottawa river and its tributaries, to build up pulp mills, paper mills, and other industries in the United States, and to find employment there for thousands of skilled laborers, who ought to be working in Canada.

"This is a question of such vital importance to the whole country as to merit the consideration of the Boards of Trade all over Canada to see if some means cannot be devised to prevent the depletion of the forests of the country without giving adequate returns in the employment of labor within the country. Many of the pulp and paper mills of the United Staes are absolutely dependent upon Canada fo their raw material in the form of pulp wood, and should their supplies from thi source be cut off, a large number of thes establishments would, without doubt, b immediately transferred to this side of th line."

A Tack to S'uth'ard.

A petition, on which a comment is made elsewhere, has been presented to the Minister of Crown Lands of Quebec by E. A. Dubuc, manager of the Chicoutimi Pulp Co., which is now shipping its products chiefly to the United States market instead of to Great Britain. Mr. Dubuc has sent in the names of the following companies as agreeing with him in the terms of the petition: The Riordon Paper Mills Co., the Royal Paper Mills Co., the Lake Megantic Pulp Co., the North Shore Power Railway and Navigation Co., the Estate of Frank Dudley, the Riviere Ouelle Pulp and Lumber Co., Price Bros. & Co., the Jonquiere Pulp Co., the Price-Porritt Pulp and Paper Co., the Montmagny Light and Pulp Co., the MacLaren Co., the Ouiatchouan Pulp Co., and the Jacques Cartier Pulp and Paper Co.

The substance of Mr. Dubuc's petition is as follows:

Whereas, the quantity of wood pulp manufactured in the Province is 225,000 tons per annum, viz.: 150,000 tons for export and 75,000 tons for home consumption;

And whereas out of the 150,000 tons manufactured for export about 40,000 tons are sold in England and about 110,000 tons in the United States;

And whereas the large investment of capital in the paper mills of the United States and the shortage in the production of pulp guarantee a firm and increasing market;

And whereas the natural market is the United States if not hampered by duties;

Whereas Quebec has imposed an additional stumpage tax of 25 cents on pulp-wood cut from Crown lands for export to the United States;

And whereas the United States Treasury holds that this is in effect an export duty;

And whereas, though the pulp industry of Quebec has grown rapidly in the last few years, this additional tax of 25 cents and 40 cents per ton is a real burden;

And whereas, out of an average of 350,000 cords of wood exported from Quebec in the last two years, only 60,000 cords per annum have been cut on Crown lands for export, yielding a revenue of $15,000, two-thirds of which have been paid by Americans holding limits, and the other third by Canadians exporting wood to the United States;

And whereas the export of pulp from Canada to the United States during the year ending June, 1903, was $1,800,000, and the export for last year was still larger, and that the estimated quantity from Quebec is over 100,000 tons, which have been subjected to countervailing duty amounting to $28,000. The bare facts of the last two paragraphs show that the $10,000 collected from the American limit-holders cost the Canadians $33,000 ($28,000 by countervailing duty and $5,000 by the Canadians);

Whereas the effect is to give the manufacturers of the other Provinces an advantage over those of Quebec;

Accordingly we believe that the removal of the surtax of 25 cents per cord will be a benefit: 1st, to the Government by increasing the sale of Crown lands and pulp-wood cut therefrom. 2nd, to exporters of pulp-wood from Quebec by reducing the disadvantage. 3rd, to the manufacturers of ground wood and emical pulp in Quebec for export. h, to the manufacturers of pulp for me consumption and the manufacrers of paper, because it will make inerative the countervailing duty on per, which, superimposed on the regur duty, makes the export prohibitive. h, to the railways and transportation mpanies, farmers and settlers.

* * *

R. H. Campbell,

e secretary of the Canadian Forestry ssociation since its inception, has done uch hard work, in an unassuming way, promoting the forestry movement. He a native of the County of Middlesex, nt., and has been for some years in the imber and Mines branch of the Department of the Interior. To Mr. Campbell's dustry and careful preparation is largely ue the success of the last two conventions. In addition to his work as secreary, he is one of the principal contriutors to the Canadian Forestry Journal, he official organ of the Association.

* * *

The Newfoundland Parliament will assemble on the 30th March. Among other atters to be considered will be the ratiication of the terms of the Harmsworth lp mill project.

WILLIAM H. PARSONS.

Wm. H. Parsons, one of the leaders of the paper industry, of whom mention has been made in former issues of the Pulp and Paper Magazine, died last month in Florida, whither he had gone in January in the hope of benefiting his health. The Paper Trade Journal gives the following outline of his life and work:

William H. Parsons was born on Staten Island, July 7th, 1831, his father being Edward Lamb Parsons, a member of an old English family, and his mother a daughter of Ebenezer Clark, who came of a well known New England family. He was educated at Rye, N.Y., and began his business life as a clerk in a shipping office.

In 1853 he started his career in the paper trade, when he entered the employ of Buchanan & Kilmer, with the understanding that in the January following he should become a member of a new firm to be formed at that time. The new firm was formed, the style being Cheeseborough, Buchanan & Co., and it continued in business for two years. At that time Mr. Cheeseborough's interests were bought by Mr. Buchanan, and the firm style became Buchanan, Kilmer & Parsons. Later the firm of Buchanan, Kilmer & Parsons was dissolved and the firm of W. H. Parsons & Co. was organized, William F. Mott, Jr., being the junior partner. Two or three years later this firm was succeeded by W. H. Parsons & Brother, A. W. Parsons being the junior member. In 1876 George F. Hicks succeeded A. W. Parsons as the partner of W. H. Parsons, W. H. Parsons, Jr., and Marselis Parsons, sons of W. H. Parsons, and now of Parsons Brothers, being admitted at a later date.

Mr. Parsons years ago became interested in paper and pulp manufacturing, and held controlling interests in the Bowdoin Paper Manufacturing Company, Brunswick, Me.; the Lisbon Falls Fibre Company, Lisbon Falls, Me., and the Pejepscot Paper Company, Pejepscot, Me., which interest, together with that in W. H. Parsons & Co., he sold last December to David S. Cowles, his son-in-law, and F. C. Whitehouse. Mr. Parsons, when the sulphite industry was being established in this country, was a stockholder and director in the American Sulphite Fibre Company, and after making a tour of investigation through the sulphite mills on the other side, he organized the Barclay Fibre Company, which built a mill at Saugerti N.Y. This mill was shut down and t digesters and other equipment were so to a mill in Jefferson County, N.Y.

Mr. Parsons was president of t American Paper and Pulp Associati from 1884 to 1886.

Great Britain's Paper Trade.

Statistics for January.

The London correspondent of the Paper Mill writes:

The first month of the year has opened well for the foreigner in sending supplies of paper, etc., to the British market. The total quantity was 596,117 cwts., of the value of £410,052, as compared with 522,264 cwts. and £376,882 for the corresponding month of the previous year. The receipts during January last included the following:

Unprinted paper.	377,734 cwts.,	£287,887
Hangings	4,557 "	13,845
Other printed or coated papers..	13,626 "	35,520
Straw boards....	110,639 "	35,024
Mill board and wood pulp boards	89,561 "	37,776

Compared with January, 1904, an increase is shown of 24,314 cwts., and £11,887 in the imports of unprinted paper. Taking the imports of hangings and other printed or coated papers, together, they amount to 18,183 cwts., of the value of £49,365, an increase of 3,051 cwts., and £6,434, compared with January of last year. The imports of boards show a comparative increase of 46,488 cwts. and £14,849. The total values show an increase of £33,170, in favor of last month.

Of unprinted paper received during January last 118,420 cwts. were on reels, of the value of £73,316, and 259,314 cwts. not on reels, of the value of £214,571. The countries supplying the British market during the month mentioned were:

Unprinted on Reels.

Sweden	42,584 cwts.,	£26,25
Norway	32,097 "	20,92
Germany	9,912 "	6,19
Netherlands	2,614 "	2,25
Belgium	1,492 "	1,36
United States	20,624 "	10,57
Other countries...	9,097 "	5,74

Unprinted, Not on Reels.

Sweden	57,900 cwts.,	£40,89
Norway	53,382 "	34,77
Germany	28,934 "	27,66
Netherlands	41,572 "	38,10
Belgium	30,097 "	27,87
United States....	17,581 "	14,07
Other countries...	29,848 "	31,18

In regard to unprinted on reels, th total value for January shows an in crease of £5,347 compared with the cor responding month of last year. The market apparently is swamped with the Scandinavian product, Norway and Sweden between them being responsible for nearly 65 per cent. of the total value of the imports of this particular class The receipts from the United States amount to about 14½ per cent. of the total, and those from Germany, 8½ per cent.; Holland, 3 per cent., and Belgium under 2 per cent. Sweden heads the list but the value for last month only shows an addition of £97 compared with that for the first month of last year. Norway, on the other hand, greatly increased her supplies last month, the value showing an addition of £6,793. The reel paper from Germany marks a comparative decline of £1,126, but from Holland and Belgium increases are registered of

91 and £403 respectively. Some of paper shipped from Holland, and dited officially to that country, is of rman origin. Last month's receipts reel paper from the States marks a :rease of £764, compared with Jan- y of last year.

Jnprinted paper, not on reels, is gely received from the Continent; in :t, nearly 44 per cent. of the total lue is on account of the imports from rmany, Holland and Belgium. Swe- n and Norway also stand out promi- ntly in the list, being responsible for er 35 per cent. of the total imports. nerican shipments do not figure very gely under the heading of unprinted t on reels, last month's value being out 6½ per cent. of the total. It is teworthy, however, that the imports m the States last month show a con- lerable increase (£5,345) compared th the first month of last year. vedish supplies show a comparative vance of £3,232, and the arrivals from lgium an advance of £2,132. The de- eases were: Norway, £7,386; Ger- any, £4,171; and Holland, £3,147. ther countries, however, greatly in- eased their shipments to the British arket. The total figures show an in- ease in the imports of unprinted paper t on reels last month to the extent of 6,540, compared with January, 1904.

An alteration has been made in the ficial classification of the imports of inted paper. "Hangings" are now iown, and "Other Printed or Coated apers." The totals are mentioned ove, and the following list shows the untries supplying the British market:

Hangings.

ermany	453 cwts.,	£ 895
etherlands	965 "	2,616
elgium	2,446 "	6,902
rance	476 "	2,606
nited States.......	147 "	562
ther countries.....	70 "	264

Other Printed or Coated Papers.

ermany	2,693 cwts.,	£6,883
etherlands	1,536 "	6,098
elgium	6,810 "	14,702
France	1,271 "	4,026
United States	1,226 "	3,351
Other countries....	90 "	460

As the figures were previously lumped together under the heading of "Printed Paper" it is not possible to make any comparison.

Turning to the exports of paper, the total quantity during January last was 107,642 cwts., of the value of £157,593, an increase of 16,152 cwts. and £10,345, compared with January last year. Last month's shipments included the following:

Writings, printings and envelopes	75,089 cwts.,	£101,339
Hangings	7,576 "	21,194
Bags	3,562 "	3,654
Other descriptions.	21,415 "	31,406

These figures compare with the following for the first month of last year: Writings, printings and envelopes, 63,647 cwts., £95,691; hangings, 7,791 cwts., £22,843; bags, 2,133 cwts., £2,422; other descriptions, 17,919 cwts., £26,292. It is satisfactory to find that the exports of writings, printings and envelopes show a steady increase. The shipments during January were to the following countries:

Writings, Printings and Envelopes.

France	4,374 cwts.,	£7,268
United States.......	851 "	2,157
Other foreign countries	11,886 "	19,624
British South Africa.	11,991 "	14,045
British India.......	11,938 "	14,333
Straits Settlements..	274 "	495
Ceylon	587 "	942
Australia	22,479 "	27,269
New Zealand.......	6,295 "	8,008
Canada	2,298 "	3,421
Other British possessions	2,116 "	3,777

From the above list it will be seen that the exports of writings, printings and envelopes to foreign countries are not very heavy. France is the best customer, followed by the United States, other countries being lumped together. Over 70 per cent. of the exports of writings, etc., is on account of the demand for British possessions. The increase in the demand on the part of Australia is well maintained, last month's value showing an advance of £4,600 compared with the first month of last year. An improved demand is also shown on the part of South Africa, last month's value being £1,621 more than in January, 1904. The shipments to British India, Straits Settlements and Ceylon show a comparative advance of £214. Trade with New Zealand and Canada, however, shows a falling off of £1,904 and £174, respectively.

The countries importing hangings and bags are not shown in the official returns, but in regard to other descriptions the shipments during January were to the countries mentioned as under:

Other Descriptions.

France	972 cwts.,	£,2427
United States......	988 "	2,191
Other foreign countries	5,614 "	8,538
British South Africa.	3,233 "	3,655
British East Indies.	4,343 "	5,843
Australia	3,274 "	3,973
New Zealand.......	924 "	1,336
Canada	708 "	1,702
Other British possessions	1,359 "	1,741

The total value shows an increase of £5,114 compared with January last year.

The following total values show imports and exports for the first month of this and the preceding year:

	1904.	1905.
Imports	£376,882	£410,052
Exports	147,248	157,593
Re-exports	12,615	7,304

The imports of foreign paper last month show an increase of £33,170, and the exports of British paper an increase of £10,345, whilst re-exports (forei and colonial merchandise) show a dr of £5,311.

Paper Making Materials.

In regard to the British imports material for paper making, the tot value of January's receipts was £273,74 a decrease of £10,071 compared wi January, 1904. The imports were:

Wood pulp......	31,807 tons	£165,7
Esparto	20,974 "	81,5
Rags	1,937 "	17,8
Other articles....	.... "	8,5

During January of last year the in ports of wood pulp were 43,222 ton £189,075; esparto, 19,369 tons, £72,59 rags, 1,740 tons, £16,267; and oth articles, quantity not given, of the val of £5,880. The following is the offici classification of the receipts of woo pulp:

	Mechanical Dry.		
January,	1905....	162 tons	£78
"	1904....	1,752 "	8,12
	Mechanical Wet.		
January,	1905....	14,584 tons	£33,52
"	1904....	24,216 "	52,95
	Chemical Dry.		
January,	1905....	14,724 tons	£121,98
"	1904....	15,666 "	121,51
	Chemical Wet.		
January,	1905....	2,337 tons	£9,47
"	1904....	1,588 "	6,47

The total receipts of mechanical woo pulp during January stood at 14,74 tons, of the value of £34,313. The con ditions of the market have evidently in terfered with deliveries, as a seriou reduction is shown compared with th first month of last year, when the arri vals amounted to 25,969 tons, of th value of £61,080. The principal de crease is shown in wet mechanical, the being a drop of 9,632 tons, and in valu of £19,428, while there is a decline i dry mechanical of 1,590 tons and £7,339

The imports of chemical pulp are well aintained, the total for last month ing 17,061 tons, of the value of 131,459, a slight decrease in quantity, it an increase in value compared with e first month of last year, when the antity was 17,254 tons, of the value of 127,995. There was a comparative de-ease last month in the imports of dry emical of 942 tons, but an increase in lue of £465, and in wet chemical a mparative increase of 749 tons, whilst e value shows an increase of £2,999.

The high prices of wood pulps no oubt have led British paper makers to ay more attention to esparto, there eing a comparative increase in the im-orts last month of 1,605 tons, and in alue £8,967. January's imports of rags lso show an increase amounting to 197 ons, and in value £1,581, whilst the icrease in the value of other articles tands at £2,684.

The exports of rags and other ma-erials for paper making last month were ,493 tons, of the value of £43,275, an icrease of 465 tons and £8,763 com-ared with January, 1904. There were lso shipped from British ports last ionth rags and other articles (foreign nd colonial) to the value of £16,155, as compared with £11,443 during the first month of last year.

Paper Makers' Chemicals.

There was a good export trade in soda compounds during January. The shipments from British ports were 384,664 cwts., of the value of £126,302, an increase of 27,879 cwts. and £22,220 compared with the first month of last year. The comparative values of the articles shipped under the heading of "Soda Compounds" during January last and preceding year stand as under:

	1904.	1905.
Soda ash	£27,047	£28,203
Bicarbonate	8,865	12,964
Caustic	45,398	67,227
Crystals	2,350	3,033
Sulphate	6,680	2,461
Other sorts	13,742	12,414

The exports of bleaching materials continue to decline, last month's shipments being 65,437 cwts. of the value of £13,626, a decrease of 23,759 cwts. and £3,644, compared with January last year. The demand for the United States was as under:

January, 1905	46,091 cwts.,	£8,837
January, 1904	69,603 "	12,499

Mill Matters.

At the annual meeting of the Chatham N.B.) Board of Trade, held recently, report was presented, showing that ower freight rates on pulp had been ecured for the local mill from the In-ercolonial Railway.

Joseph St. Hilaire, an employee of the Canada Paper Co. Windsor Mills, Que., net a violent death a few days ago. He vas oiling the machinery when his coat aught, and he was carried around the haft. An inquest was held, the verdict eing accidental death. The deceased ad been in the employ of the company or thirty years.

The large industrial developments at Seven Islands, Que., are progressing. Wharves, stores, saw-mills, and a line of standard gauge railway ten miles long are being built, all more or less subsidiary to the large pulp mills referred to in previous numbers. It is expected that the pulp mill buildings will be enclosed by the time cold weather comes, so that the machinery may be installed during the winter.

The Koochiching Power Company, which is about to develop the water power at International Falls, is making preparations to begin work early in the spring. The company closed a contract recently with Martin T. Roche for the Alpena Portland Cement Company for the cement to be used in the construction of the dam the paper mill and the pulp mill. The work of construction is expected to occupy two years.

It is expected that work will be commenced on the new paper mill of the St. Raymond Pulp and Paper Co., of St. Raymond, Que. The mill, which will have a capacity of 50 tons a day, will be of concrete and steel, and will be a very complete one. This company's property is situated on the St. Anne river, 34 miles by rail from Quebec. The river at this point yields 1,500-h.p. at the minimum, but at high water 30,000-h.p. can be obtained.

The St. Mary's Falls Paper Company, with a capital of $100,000, has been organized at Sault Ste. Marie. B. J. Clergue, of the Ontario Soo, and a brother of F. H. Clergue, holds the greater part of the stock. A mammoth mill, employing a large number of men, will be built early this summer. Only print paper will be manufactured. It will handle all the pulp from the Canadian Soo pulp mill, which has an almost limitless supply of raw material.

Two lumber companies have been incorporated recently at Toronto. The Haskell Lumber Co., with power to manufacture, purchase, sell, and deal generally in lumber, wood, timber products of every kind, including pulp and pulp-wood; also the McLennan Timber Lands and Lumber Co., one of whose stated rights is to buy, sell, lease, deal and trade in lumber, bark, wood, pulp, pulp-wood, etc. It is interesting to notice that power to handle pulp and pulp-wood appears in almost all the recent incorporations of lumber companies.

Robt. Aiken has been appointed superintendent of the Canada Paper Company's Springvale mill, vice P. Byrne, who is now with the Riordon Paper Company. General Manager Campbell reports that Mr. Aiken was the first man in the employ of the company to take a prize for suggested improvements in their departments. Mr. Campbell inaugurated a system of giving prizes for suggestions sent in by employees, a distribution being made every six months. Several hundred dolla have already been distributed in this wa to those of the company's employees wh use their heads.

On account of low water, J. R. Booth pulp mill at the Chaudiere is workir only on part time at present. Th trouble is caused by the formation ice in the flumes, which, blocking the up, forces the water around by way the falls. On account of the shortag of water, an arrangement has been mac between the street railway company ar Mr. Booth, whereby the latter, by clo ing down his machines, gives the railwa company increased water supply durin the day, while the railway people reci rocate by shutting down early at nigh thus increasing the water supply fc the pulp mill.

J. M. Mackinnon, managing director the Canadian Pacific Pulp and Pape Company, an English company, wit offices at Vancouver, B.C., announces th the work begun at Swanson Bay on th mainland coast, 400 miles above Va couver, will be continued, and that befo a year is past the finest grade of pul will be shipped to Great Britain. A saw mill of about 40,000 feet daily capacit will be erected at once, and will be fo lowed by a sulphite plant of 35 or 4 tons' capacity per day. When condition warrant, a paper mill will also be erecte This company has 83,000 acres of limit which have been surveyed.

Frank B. Gilbreth, New York, ha been awarded the contract for the erec tion of the entire plant of the St. Croi Paper Co., near Calais, Me. It will cor sist of a sulphur storage building, sulphur burning building, an acid build ing, a digester building, a blower build ing, a screen building, a generator build ing, a pump building, a grinder building a beater building, a boiler building, finishing building, a machine buildin and a storage building. With the ex ception of the storage building, whic is to be a frame structure, the entir plant will be of brick and steel. Th company hope to install the machiner by October 1st of this year.

The Electro-Manganese Company has been formed to develop the water power of Grand Falls, N.B. This company will manufacture ferro-manganese at the alls, operate pulp, paper and saw mills, and transmit electric power down the St. John river valley as far as St. John for lighting and manufacturing purposes. The whole project will involve an expenditure of from $3,000,000 to $4,000,000. Work will commence this pring. Barton E. Kingman, of New York, and Frederick Sayles, of Providence, two prominent promoters, have deposited $40,000 with the New Brunswick Government as a guarantee of good faith. It s stated that the company has advance orders for 400 tons of paper per day.

W. D. Woodruff, of the Lincoln Paper Mills, Merritton, Ont., when interviewed egarding the condition of the Canadian paper trade, expressed himself as satisfied with the market on paper bags, which is one of the main staples of the Lincoln Mills. The syndicate of paper bag manufacturers in the Dominion is still in admirable working order, and the market is not overstocked. Mr. Woodruff thinks the same is true of the American market, and he sees no evidences of a surplus being dumped into Canada. Most of the Lincoln Mills output is sold in Ontario, and nearly half of it in Toronto alone. The increased output which Mr. Woodruff is preparing for will be placed in the West.

The annual general meeting of shareholders of the Canada Paper Co., Limited, was held in the company's office, 70 McGill street, Montreal, on Tuesday, 14th March, when the directors' report for the year was submitted. Reports showed that dividends for the year had been paid on preferred stock and a satisfactory balance carried forward. The following gentlemen were elected directors for the ensuing year: Sir Hugh Montagu Allan, H. S. Holt, Hugh Allan, Charles Hosmer, H. Markland Molson, Hon. Robt. MacKay and John MacFarlane. At a subsequent meeting of the directors, Sir Hugh Montagu Allan was elected president, and Mr. Holt, vice-president. F. J. Campbell was appointed general manager, and H. M. Thorne, secretary-treasurer.

It was rumored that the E. B. Eddy Company, of Hull and Ottawa, would shortly be taken over by a syndicate with a large capitalization, and that Mr. E. B. Eddy would be the president of the new company. The properties are valued at upward of $4,000,000, and are among the largest paper and woodenware plants on the continent, giving employment to several thousand people. The officials of the company authorize a distinct denial of this report. The annual meeting of the company was held this month, when E. B. Eddy was re-elected president, S. S. Cushman, vice-president, and W. H. Rowley, sec.-treasurer. The Eddy Company has been hampered like most other mills by low water, but this has not interfered with the full operation of their paper machines, and is not likely to now that spring has come. The company has acquired for its new Toronto warehouse four flats of the Gage building, 54-58 Front St. W., into which they will move on the 1st of April. All lines of the company's stock will be carried in the new warehouse, which has 50,000 feet of floor space.

From an English contemporary, we take the following: In the Chancery Division, Mr. Justice Buckley heard a petition from H. G. Campion for the compulsory winding-up of the Sturgeon Falls Pulp Company, Limited. Mr. Upjohn, K.C. (with whom was Mr. Cozens-Hardy), said the company was formed in July, 1898, to carry on business in Canada, to manufacture pulp, and paper from that pulp. Petitioner was a shareholder and a debenture holder, and, in respect of a claim for directors' fees, a creditor. In March, 1903, the company entered into an agreement to sell the whole of its undertakings and assets to the Imperial Paper Mills of Canada, Limited. The sale was completed on May 7th, 1903, on the side of the vendor, but the petitioner complained that since then nothing had been done to wind up the company and divide the consideration received. A resolution had been passed to wind up. The whole question now was one of costs. His client, who was a solicitor, had offered to take his "out of pocket" costs, and that offer was still open; but the matter was to be fought out because the directors took exception to the petitioner. The latter objected to certain matters carried out by the directors, and he circularized his fellow-shareholders on the subject asking them to join in objecting. That seemed to have created bad feeling. Mr. Buckmaster, K.C., for the company, said his clients objected to the petition before the Court, and asked that it be dismissed with costs. His Lordship dismissed the petition with costs.

Mayor White of St. John, proposes to invite tenders for the Mispec pulp mill property now owned by the city. He says at least two parties are anxious to be owners.

The new dam of the Spanish River Pulp Co. is now safe from the dangers of high water, and work is being pushed at such a rate as will enable the company to turn out pulp early this summer. This dam will yield 10,000 h.p. at low water, and the mill will be one of the most complete in Canada.

Members of the firm of W. J. Gage & Co., wholesale stationers, Toronto, have purchased from Messrs. Ritchie and Smith a controlling interest in the Kinleith Paper Co., of St. Catharines. W. J. Gage will be president, Herbert Gage sales agent, and W. P. Gundy superintendent. The products of the mill will be the same as before.

The disposition of the bonus granted by Thorold, Ont., to the Montrose Paper Company is in dispute between the promoters of the company. Thos. H. Patterson, a commercial traveller of Niagara Falls, was the active promoter, and secured a bonus from Thorold amounting to $5,000. In an action against his co-promoters, Thos. W. Brown and W. G. Finlay, he recovered judgment for $1,666, one-third of the bonus which he said it was agreed he should receive for his efforts. The two defendants have appealed from this judgment. They say that no act of theirs could bind the company, which is an entirely distinct person in the eye of the law, and that their agreement with Patterson merely amounted to an undertaking to make no objection to the payment of the money if the company saw fit.

Forestry and Pulpwood.

The Shepherd & Morse Lumber Company, of Ottawa, has purchased from the Bronson Company a large limit containing 105 square miles on the Montreal river, in the Temiskaming district. The limit includes three berths, and the price paid was $250,000. In lumber circles the figure mentioned is taken as indicating that lumber values are holding firm. The limit is practically the last of the Bronson holdings in the Upper Ottawa country.

The Riordon Paper Mills Company is suing N. Derouin for $25,000, which amount it claims to have overpaid him while a jobber for the concern. The payment has been based on figures furnished by certain cullers, but the company claim that these cullers had not measured any large quantity of the logs, but had measured only a small quantity and averaged. The company alleges that the figures were fraudulently given, with the connivance of the defendant.

It is said that Kaukauna and Appleton (Wis.) paper manufacturers will soon receive their raw material from Canadian fields. On account of the manufacturers being hampered by the inability of securing pulp of the proper grades a company has been formed which will purchase timber and furnish pulp-wood to Fox river valley mills at a saving of $3 per cord. It is understood that Milwaukee parties are interested in the plan.

Reports from the limits near Ottawa show that the work of getting out pulp-ood is seriously retarded by the snow, hich in the Gatineau and other dis-ricts has fallen this winter to an un-recedented depth. Present indications re that considerable stock will have to e left on the limits, as the operators re finding it impossible to break roads.

A writer in the New York Herald says: The pulp industry of this country has rown to such enormous proportions that practically dictates the prices which awmill men shall pay for saw logs. In act, while the advance in the price of the anufactured article has been consider-ble, the profit has not gone to the manu-acturer, but rather to owners of stump-ge. Would that we could say something f afforestation that would show that we re awake to conditions of an ever rapidly ecreasing acreage of stumpage. Would hat fate would give us some genius who ould find a cheaper basis for pulp than ur forests. Fortunate it will be if the xperiments with steel lead to the aban-onment of wood for railroad ties. The ttention of capital is more and more be-g turned to forestry. The substitute for ulp will yet be found. Steel ties or ome other kind are bound to come. These hree things will ease the situation, but ase it as you will, the days of cheap lum-er are gone, never to return."

* * *

AS SEEN FROM NEW YORK.

The main reason assigned for the rospective embargo [on the export of ulp-wood] is that the Province should erive some benefit from one of its rincipal raw materials by keeping ithin its borders the manufacturing ndustry dependent on that raw ma-erial. In other words, the Canadians ant to realize some revenue from heir forest resources, and this they hink they can secure by forcing the sers of their wood to manufacture the ame into pulp within the limits of the rovince. If you want our wood, say e Canadians, come over the border nd erect pulp mills. The American onsumers, however, see in this invita-n a threat designed to force the United States Congress to take off the duty on paper and pulp. . . . By refusing to let any more pulp-wood out of the country, the Canadians no doubt figure that the price of news paper will be advanced so much to the American newspaper publisher that the latter will force Congress to remove the duty on pulp and paper.

A complete embargo on the exportation of pulp-wood, and not a prohibitive duty, is likely to be put in force, as any duty on the logs would be met by the countervailing duty on the pulp when the same is exported to the United States. A duty would, therefore, not serve the purpose of the Canadians, as for the present at least they do not want to prohibit the exportation of pulp, as their home consumption is not large enough to use all they produce. A transfer of paper mills across the border, it is said, is not one of the objects of the embargo. The erection of pulp mills in Canada by the owners of American paper mills would, however, follow as a natural sequence to the putting on of the embargo. The large paper manufacturing companies that now depend on their Canadian supply of pulp-wood would either be forced to build pulp mills in Canada or use their own woodlands at home. In either event increase in the cost of ground wood papers would follow after a time, as the domestic supply is admitted to be limited, and is becoming more costly to cut each year.—Paper Trade Journal, March 9th.

* * *

PERSONAL.

John Christie, manufacturers' agent in pulp and pulp and paper mill supplies, has moved his offices to 5 King Street West, Toronto.

H. C. Hamilton, solicitor for the Lake Superior Corporation, was in Toronto a short time ago, along with F. H. Clergue. Mr. Hamilton says that all the company's industries are running, except the mechanical pulp mill, which is short of wood. He expects a complete revival of industrial activity in the spring.

A. S. Fairbanks announces that he and H. A. Moody, lately engineer for the Union Bag and Paper Co., have formed a partnership under the firm name of Fairbanks & Moody, and that they will make a specialty of general industrial engineering, the designing and construction of paper and pulp mills particularly, and hydraulic development. Their address is is 150 Nassau St., New York.

* * *

PULP-WOOD IN ALBERTA.

W. J. Conoly writes from Leduc, Alberta, to the Manitoba Free Press:

Eastern Manitoba and the Lake Superior country can, as we all agree, supply the central section of the United States with cheap paper; but no less can northern Alberta supply the Western States. The material may be exhausted sooner, as the land is more valuable for farming, but this would cause the wood to come to the mills more cheaply. I am personally acquainted with many square miles of land in this district, covered with a dense forest of poplar, many of which trees are large enough for good saw-logs; while the average tree would measure five inches at least thirty feet from the stump; and yet, because coal is so plentiful that it makes this of no value for fuel, the farmers are preparing to put fire through it in order to kill these trees, and burn them off later.

Here at Leduc we have a lake two miles or more long, an abundance of poplar timber, and some spruce, which the farmers would be glad to draw in during the winters while clearing their wooded lands. The place would be ideal for pulp or paper manufacture.

* * *

WORKING UP BROKE PAPERS.

We give below an abstract of a recent article appearing in the Papier Zeitung on this subject:

The writer makes use of paper cuttings, and has worked for the last s
months with a pulping machine, ar
finds that they can work very satisfa
torily and without any hitch. He h
now given up the use of edge runner
as he has found that the stuff is muc
better worked up in the pulper than
the edge runners. His paper has no
a rattle and feel which it had not prev
ously, and is also stronger. This l
explains on the ground that the fibr
are only separated in the pulper and n
beaten. Furthermore, he has succeed
in reducing the amount of fibre lost, an
seeing that he no longer boils his was
paper, but puts the dry material in
the pulper, which is also supplied wi
warm water from the condenser, he h
been able to effect a saving in coal.

Referring to other letters on the u
of pulpers, he answers some objectio
that have been brought forward, such
the breaking of the teeth, by noting t
fact that the form of pulper which
has used possesses neither teeth n
pins to be broken, and that there is ve
little wear on the revolving arms. T
machine that he has used is the wel
known one invented by Dr. Wurste
and he states that after six months' u
interrupted running the revolving arn
have not even lost some of the pair
He uses unsorted waste, which contai
bits of wire, fasteners, and other piec
of iron, but they have in no wa
damaged Wurster's pulper. By loose
ing the side of the machine it is easy
remove pieces of rubbish, such as strin
wire, wood, etc. By taking a little ca
it is easy to obtain perfectly spotle
pulp. It is only necessary to see th
the pulper is kept well filled and reg
larly supplied, and that the water supp
is in accordance with the stiffness of t
material. This can be soon learnt
careful observation of the machine.
general, one may say that the pulp
works easier the more water that
used, but, on the other hand, this has
greater tendency to produce spott
pulp. With very hard material it
better to use a pulper built as long
possible.

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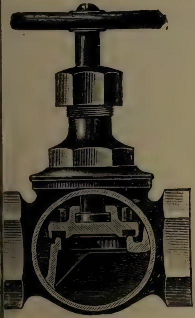

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THE PULP MARKETS.

Within a week from the time this issue appears the pulp mills throughout Canada will have plenty of water, and the pulp shortage will be at an end. Water is at the present time on the rise in a number of rivers. Prices for ground pulp are nominally the same as quoted last month, but as soon as the mills are running to full capacity there will be a decline. As to the condition of the wood market, it is too early to know the amount of pulp-wood which will be floated to the mills, but appearances are not unfavorable for a good supply.

⁂

RAG AND PAPER STOCK MARKET.

Montreal, 18th March, 1905.

We have not much change to report in the paper stock market since last month. There have not been many transactions as mills in this vicinity are nearly all short of power and what availabl stocks there are are held at high price The advance in prices began last autum in the better grades of stock, but recentl the lower qualities are getting scarcer an dearer.

Manufacturers expect that with th opening of spring, rags which have bee left uncollected owing to the severe winte will be marketed in good supply and reduc values. This may not be fully realized as owing to tariff conditions that affec the value of woolen rags in the States large quantities of mixed country rag have been going to the States, for price at which Canadian graders could no afford to sort them, owing to the ver much lower value of woolen rags here than in the States.

European rags for delivery during th open season can only be obtained a prices much higher than was paid las year.

Waste paper is the only exception, th demand having fallen off somewhat, an

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Bell Patent Flat Wires for Book Papers

supply is rather in excess of present requirements.

White shirt cuttings	$5.25	to	$5.75
Light print cuttings........	3.75	to	4.25
Unbleached cuttings	4.00	to	4.50
Corset cuttings	4.00	to	4.50
White shoe cuttings	4.50	to	4.75
Colored shoe cuttings	2.75	to	3.25
Blues and thirds	1.40	to	1.50
Roofing stock	.60	to	.70
White paper shavings	1.50	to	2.00
Colored paper shavings	.60	to	.75
Common waste paper	.40	to	.50
Manilla rope	2.00	to	2.25
Old bagging	.55	to	.70

* * *

—Those who have much to do with mechanical pulp generally find that hot-ground pulp is more liable to decomposition than cold-ground. The reason of his, according to Dr. Klemm, is generally to be found in the fact that when hot water is used a smaller quantity is required, and in consequence less of the oluble material is removed from the wood. It is this soluble matter which erves as food for moulds and other organisms. Even in mechanical wood produced by the cold-grinding process here is to be found a considerable quanity of soluble matter, frequently amounting to ½ and even 1 per cent. A portion of this consists of matter of the nature of albumen, or white of egg, which readily decomposes. Cold water washes a considerable quantity of this away, but hot water coagulates it, and t is consequently retained in the fibre.

Drainer Stones

Save your stock and temper by using the Klary & nell Patent Drainer Stones. They are the only drainer hat give satisfaction.

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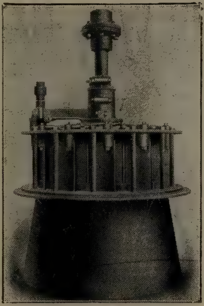

We have supplied many of our Samson turbine water wheels to pulp mills for direct connection to grinders, for driving beaters, and, in fact, for all power purposes.

The Samson has an even and regular speed under all changes of load, ensuring better and more even quality of pulp and an even output from the paper machines.

Of course the work placed on a water wheel when used for this purpose is very trying, but the Samson has never yet failed, under even harder conditions.

It also costs less per horse power than any other turbine.

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COLORING.

For pure shades of chrome yellows use 3 to 4 parts sugar of lead or nitrate of lead to one part bichromate of potash. Don't heat the furnish, and avoid even traces of alkali. Add the alum before the size.

Analine dyes are commonly reduced n strength by the addition of Glauber's salt, dextrine, sugar, salt, etc.

Do not therefore assume that the cheaper colors are always the least expensive in use.

Do not expect to get the best results in coloring unless you use the proper mordants as well as the right colors.

Loading materials promote the fixation of colors, especially if the furnish is warmed.

To obtain strong shades with acid coal-tar colors, hard sizing is essential. Don't use acid colors on unsized paper.

When fastness is essential, use acid colors in preference to basic ones.

For the best results dye the stock with a basic color and top with an acid color.

Never add anilines to the stock without first dissolving the color in hot water and coloring. Don't use hard water for this purpose.

Don't look too long at the color you are matching or your eye will lose its sensitiveness. Decide quickly.

If you think you are buying a mixed color, drop a little of its solution upon blotting paper. If mixed the several colors will appear in different zones.—From Little & Walker's "Useful Data for Paper-Makers."

* * *

—The Italian sulphur industry is greatly concerned, owing to the shipments of American sulphur from Louisiana to Marseilles. According to advices from Rome, questions have been put to Baron del Balzo, Italian Under-Secretary of Agriculture, on the subject of the production of Louisiana sulphur, and on the measures the Government intend to adopt for the protection of the Italian

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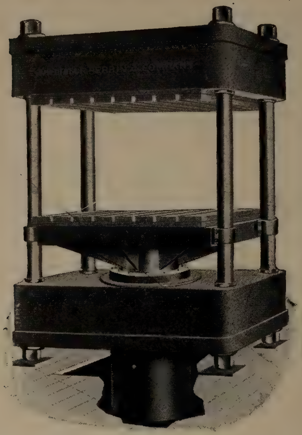
sulphur industry. He declared that up to the present, Italian sulphur could profitably be sold in Marseilles, Rotterdam and Stockholm, where the American Sulphur Company had made its first shipments. For the present, Baron del

PRESSES, HYDRAULIC or KNUCKLE JOINT.



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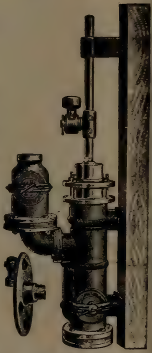

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Balzo remarked, the danger was not very imminent, and did not appear to him to be very serious. Professor Luzzatti (Minister of the Treasury) added that the Government looked with great interest upon the production of sulphur in Louisiana. He declared that he was sure that when the deputies who had questioned the Government knew the action of the Government, they would feel completely satisfied.

—L'Industria, in a notice on the Italian paper industry, says the total number of workmen employed in all branches of the business is 15,766, and that the annual production of paper in the kingdom is 995,600 quintals, to produce which the raw material used weighs 1,749,000 quintals. The chief centres of the industry are the Provinces of Novara, Milano, Vicenza, Torino, Como, Lucca, Ancona, Genoa, Brescit, Cuneo, Macerata and Salerno.

—The use of oil as a means of determining whether paper is tub-sized may be generally known among paper testers, but as it does not appear to have got into print it is worth giving. Take two pieces of paper, one engine-sized, the other tub-sized, and hold them together to the light, then simultaneously put a drop of any vegetable or animal oil—such as olive—on the papers. The oil will almost immediately produce a translucent streak as it runs down the engine-sized paper, whereas the tub-sized sheet will be much more gradually permeated. There is a marked dif-

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rence even with weakly tub-sized pers. Although not absolutely infalle it is the most reliable of the doestic methods. — "Jay," in World's aper Trade Review.

* * *

—The American Peat Fuel Co., imited, of Capac, Mich., has leased its ant to a Boston firm, who will make uilding paper of peat.

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The Hubbs & Howe Co., of New York, has been licensed to do business in Ontario to the extent of a capital of $10,000, in carrying on a general wholesale and retail trade in all kinds of paper, cordage and other merchandise.

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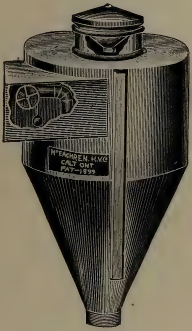

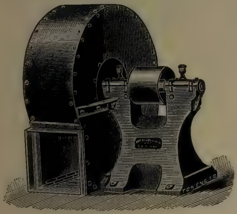

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ture wood pulp. The incorporators are: T. Lynch, M. Lynch, T. L. Lynch, and T. B. Lynch, of Fredericton; P. B. Millie, of Glassville, and J. D. McMillan, of Boiestown. The headquarters of the company are to be at Nelson, N.B.

Thompson Stationery Co., Toronto; $40,000. H. Thompson, J. H. Rush, F. N. Rush, J. R. Roaf and W. J. Green, Toronto.

Hamelin & Ayers Co., Lachute, Q., have been given power to assist the Chatham Pulp and Paper Co., and the Lachute Shuttle Co.

The Ottawa Pilot Printing and Publishing Co., Ottawa; $50,000. F. E. Bambrick, J. Rankin, T. B. Rankin, W. Johnson, and A. Smith, Ottawa. To publish, print and issue a political, educational, scientific or literary newspaper, etc.

⁂

THE HYGROMETER.

A study of the hygrometer in the machine, air-drying, and other rooms where the temperatures are high is useful, not only for indicating the humidity of the air, but in conjunction with the anemometer for deciding schemes for ventilation to the best advantage. An ordinary "wet" and "dry" bulb thermometer is quite good enough for the purpose, and the observer can get sufficient information about the dampness or dryness of the air without troubling about dew points or actual percentages of moisture.

It is necessary to remember only that "the greater the difference between the two readings, the dryer the air." When the "dry" bulb shows 80° F. and the "wet" 79½° F. the air is practically saturated with moisture, and bad for workmen prone to pulmonary complaints. 80° F. "dry" and 68° F. "wet" is good, and the heat is much more endurable than the humidity of 75° F. "dry" and 73° F "wet."

The importance of moving dry air in the air drying house is well recognized, and this, always provided there is a thorough draught, is generally one of the healthiest places in a mill; at fairly low temperatures there is often 12 and sometimes 15 "degrees of dryness."

Temperatures of 70° F. and 60° F. respectively must be regarded as excellent for the paper machine house, and the workers who get this condition are fortunate.—"Jay," in World's Paper Trade Review.

⁂

MILLS OF AUSTRIA-HUNGARY.

M. Kranz Krawany, president of the Union of Vienna Paper Makers, has published an interesting article on the history and development of the paper industry in Austria-Hungary. It appears that the first paper mill was founded in 1520 at Ullersdorf, in Moravia. This mill still exists, and is owned by Messrs. Schmidt & Son. In 1826 the first mechanical mill was installed at Kaiser-Muhle, near Prague. Since 1856 there have been installed mills for mechanical, soda and sulphite pulp.

In 1878 Austria-Hungary had 177 machines in operation, 84 making ground wood, 9 straw board, and 3 sulphite pulp. In 1903 there were 166 paper mills with 247 machines, 5 in construction, and 3 out of commission; 277 pulp and board mills, with 590 cylindrical machines and 981 grinders; 3 straw pulp mills and 38 sulphite mills. All these mills give employment to 26,460 workers.

⁂

—The Board of Trade of Sault Ste. Marie suggests that in order to attract immigrants to New Ontario loans of $1,000 each be made to settlers by the Government. The conditions prescribed by that Board are: (1) That the area to which this policy should be applied be set apart; (2) that the loan in each case be in four annual instalments of $250 each; (3) that there be previously completed improvements in each case equal to the value of the advance. The policy was adopted in New Zealand and in Argentina with success, swarms of immigrants having been attracted by it, every one of whom paid off the loan in the minimum time.

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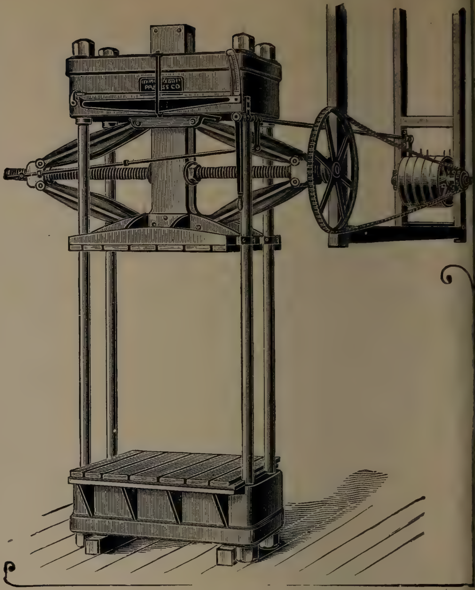

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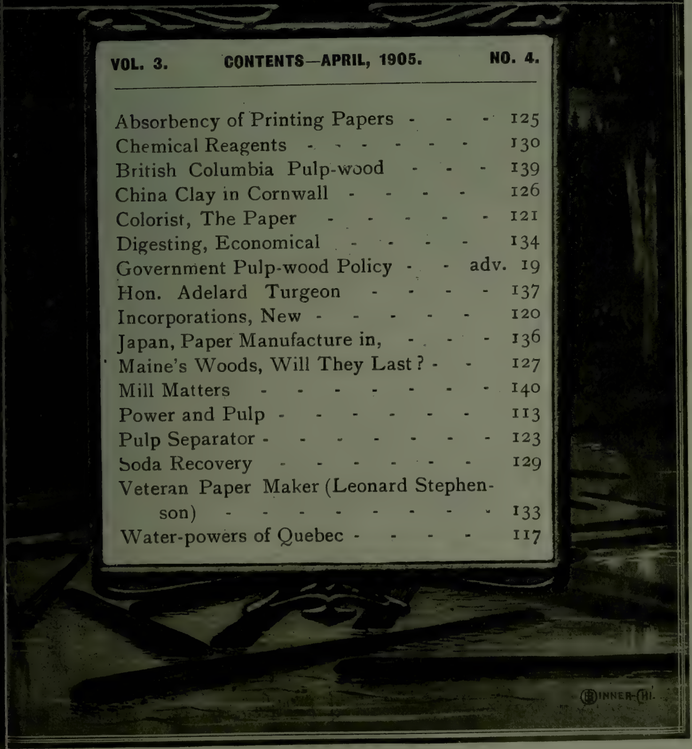

VOL. 3. CONTENTS—APRIL, 1905. NO. 4.

Absorbency of Printing Papers - - - 125
Chemical Reagents - - - - - - 130
British Columbia Pulp-wood - - - 139
China Clay in Cornwall - - - - 126
Colorist, The Paper - - - - - 121
Digesting, Economical - - - - 134
Government Pulp-wood Policy - - adv. 19
Hon. Adelard Turgeon - - - - 137
Incorporations, New - - - - - 120
Japan, Paper Manufacture in, - - - 136
Maine's Woods, Will They Last? - - 127
Mill Matters - - - - - - - 140
Power and Pulp - - - - - - 113
Pulp Separator - - - - - - - 123
Soda Recovery - - - - - - 129
Veteran Paper Maker (Leonard Stephenson) - - - - - - - - 133
Water-powers of Quebec - - - - 117

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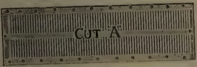

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INDEX TO ADVERTISEMENTS.

oit Iron Works 23
ıson & Co., W. T. 10
ıtley & Jackson 4
tram's, Limited 6
ck-Clawson Co 7
water & Sons, W. V 26
dt & Co., F. 10
ınner, Mond & Co., Limited 18
ıada Paper Co 25
ıadian Rubber Co. 8
rier, Laine & Co 17
tle, Gottheil & Overton 9
ney-Bigelow Wire Works 14
istie, J 26
istie, Limited, George 3
ısland & Co., A 10
ris & Co., F. H. 8
twood Wire Mfg. Co 2
erson Mfg. Co 13
rbanks Co., The 13
ese, Jean 3
nilton Mfg. Co., Wm 15
dy, George F. 9
wksworth, Alfred 12
Knife Co., Peter 19
ıgh, R. 26
yck & Sons, F. C 5
rnational Pulp Co 9
kes Machine Co 12 & 24
ıson & Sons, Limited, C. H 6
yon & Son, James 19
Klipstein & Co., A 11
Kimball, Herbert S. 9
Knight & Co., John 21
Little & Walker 9
McOuat & Son, T. 18
Paton, Thomas L 3
Porritt & Sons, Joseph 10
Porritt & Sons, Limited, Samuel 26
Porritt Bror. & Austin 6
Perrin & Co., Ltd., Wm. R 18
Pringle & Son, T. 9
Pusey & Jones Co 16
Quebec & Lake St. John Ry. 9
Reich & Co., O. 18
Seymour & Guest 9
Sheldon & Sheldon 21
Smith Co., S. Morgan 25
Snell, Samuel 15
Sullivan & Co., C. F 10
Union Screen Plate Co 3
Vogel, C. H 9
Wallace-Jaastad-Drewson 18
Wertheim & Co., A 20
Waterous Engine Works Co., Ltd 24
Whittaker, Richard 11
Wilson, Paterson & Co. 12
Winn & Holland 18
Wurster, Dr. C. 16
Young, J. S 25

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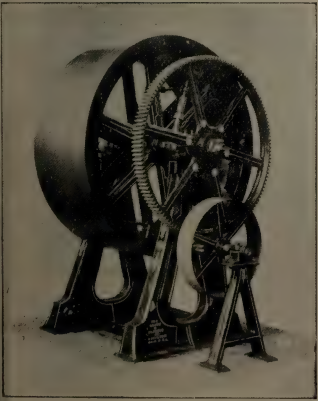

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Temagami by the Imperial Paper Mills,
which permission was granted by the
Ross Government.

—As a living example of the co
quences of deforestation, we need sin
look to Spain, a country which centu
ago was rich in timber and agricult
products, a proud sea-faring nation
world conquerors. Spain's decad
dates from the time when her tin
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ing relaxed, and her barren, unprote
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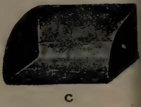

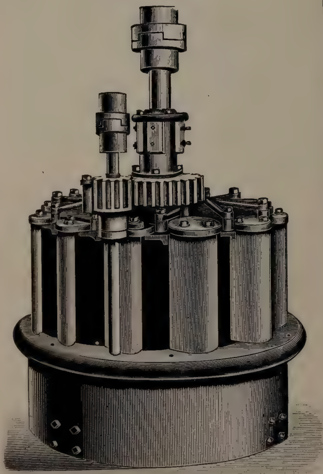

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OF CANADA

VOL. 3.—NO. 4. TORONTO, APRIL, 1905. {$1 A YEAR. SINGLE COPY 10C.

Pulp and Paper Magazine

A monthly magazine devoted to the interests of Canadian pulp and paper manufacturers and the paper trade issued between the 15th and 20th of each month.

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POWER AND PULP.

The instructive paper on the water-powers of Quebec, which J. C. Langelier, Chief of the Forest Rangers of that Province, contributes to this number of the Pulp and Paper Magazine is a suggestive supplement to the remarkable array of figures which that gentleman gave in his paper before the Canadian Forestry Association, printed in last issue, on the forest resources of Quebec. Quebec's industrial position—especially its possibilities for manufacturing pulp and paper—is unique among the countries of the world. The water-powers referred to by Mr. Langelier are enormous, but they are merely samples. No attempt is made to give totals of the unused water-powers, because scores upon scores of water-powers which undoubtedly exist in the northern regions of the province have never been visited by white men, and consequently have never been measured. When these regions have been explored and the water-powers measured, it will be shown that Quebec has not only the greatest forest areas, but the greatest water-powers of a Dominion that stands at the head of all countries for available water-power. Its almost illimitable spruce areas combined with these astounding water-powers render it, and the Dominion to which it belongs, the greatest field on earth for pulp and paper manufacturing; provided these great resources are not wasted, but are wisely conserved for future generations.

In considering the statistics presented by Mr. Langelier on the forest wealth of Quebec, it is, of course, clearly recognized that the figures are not precise, since most of the vast regions treated of have not yet been surveyed in detail, and many large areas have not even been gone over by the timber explorer. Deductions have to be made for water areas, swamps, and inaccessible mountain sides; and so far as the particular industries of pulp and paper manufacturing are concerned, allowance would also have to be made for those pulp-wood areas which can only be got at by building railways to bring the wood down to the rivers and mills. It will be seen by the shaded portions of the sketch map that an immense area of the Province is already under timber license, many of these timber licenses being held by United States firms or by Canadian timber limit holders working under contract with United States pulp and paper manufacturers. Those who obtain timber limits in the future will have to go further back for their wood, and where railways have to be built the cost of pulp-wood will be dearer, if the railway has to depend upon this industry alone. As timber limits that are inaccessible cannot be reckoned as existing at all, to the practical mind of the manufacturer and the capitalist, Canada has only the pulp-wood that can be put profitably on the market. This, fortunately is a vast amount, especially in Quebec, New Brunswick, Ontario and Britsh Columbia, and the perpetuation of these limits depends upon the wisdom of the Provincial Governments in dealing with the pulp-wood question. A policy of encouraging the manufacture of pulp at home will not only establish an industry for which the country is fitted by nature, but when the industry is once established on a large scale and employs large capital, the necessity of conserving the raw material—the timber—by a more far-seeing forestry policy will be more evident than it appears now to be to our legislators. To strip our forests for the mere price of pulp-wood means ruination to our water-powers and our future agricultural interests by the alteration of the climate and rainfall, and it means the strangulation of a great industry in its very birth, with no compensation in any direction. The present pulpwood policy is literally a case of selling our birthright for a mess of pottage.

The Commercial Bulletin, of Boston, has been compiling a symposium of Canadian newspaper opinion on reciprocity between Canada and the United States. The result is not very encouraging to the friends of the movement in either country. Only six papers came out squarely in favor of free trade. Twenty papers favor granting concessions by Canada in exchange for reciprocal concessions by the United States; but 101 papers oppose lowering duties in favor of the United States no matter what inducements were offered, while an equal number of editors were too indifferent to write "yes" or "no" on the forms sent with stamped envelopes for reply. A number of editors in their reply expressed the opinion that before reciprocity could be considered, the United States should reduce its duties to the Canadian level. The editor of the Daily Record, of Sherbrooke, gives an opinion bearing on the pulp and pulp-wood trade. He says: "Any reduction of Canadian duties in favor of the United States must be a fair exchange and in the interests of our manufacturers, as well as other parts of our population. As an example, we will let our raw material in pulp-wood and logs go free in exchange for free entrance of manufactured pulp, paper and lumber."

* * *

At present the duties on paper and paper products are very one-sided. While the Canadian tariff ranges from 10 per cent. to the extreme of 35 per cent. ad valorem, the United States tariff, which is a comparatively complicated one, and comprises both specific and ad valorem duties, runs from 10 per cent. up to 100 per cent. or more depending on the market prices of some classes of paper. Then Canadian pulp is taxed, the duty being 1-12 of a cent per lb. on mechanical dry, 1-6 cent per lb. on chemical, and ¼c. per lb. on chemical bleached, with a surtax on pulp from Quebec, the Province which favors the United States with the raw material without which many of their mills would be compelled to close.

*

—There are now 415 paper machines in England, the latest installation being that of two German machines by Joseph Dixon at Sheffield. The number of machines in the country has declined during the last six years from 418, the number for the present year, being the lowest recorded during the six years. Seeing that the production of paper during this period shows a very considerable increase, the reduction in the total number of machines is of little importance, as the average production of each machine has increased correspondingly. We can only draw the conclusion, remarks Paper and Pulp, that a number of old machines have been discarded and replaced by newer and more effective ones.

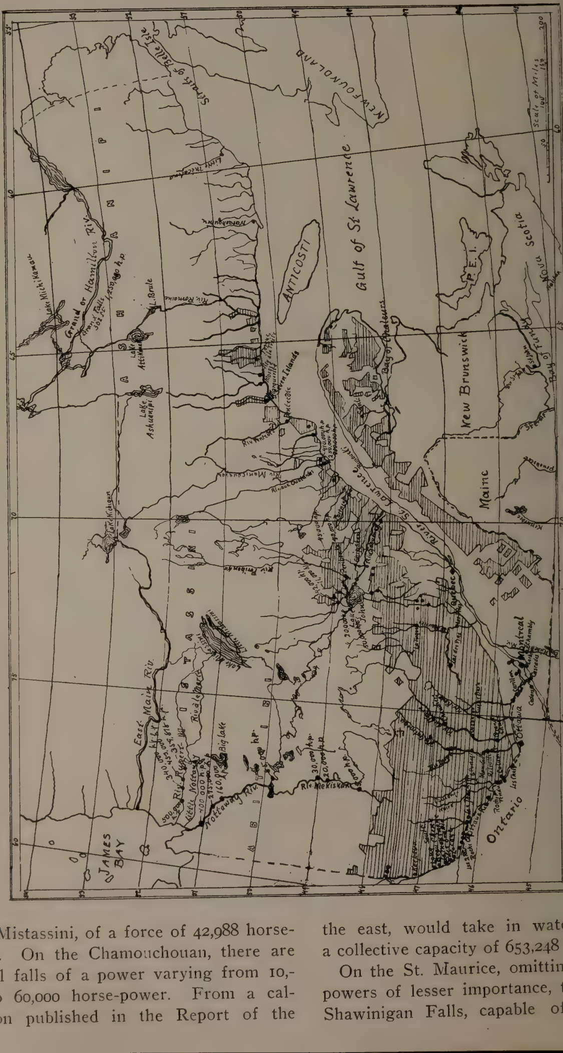
* * *

Water-Powers of Quebec.

By J. C. Langelier, Quebec.

There is not a country in the world which has so many and such immense water-powers as the Province of Quebec. These may be counted by the dozen; waterfalls capable of developing from 25,000 to 75,000-h.p., and and there are several that exceed 450,000-h.p. The Great Falls of the Hamilton river, at 150 miles from the head of tide, are 302 feet high, and regard being had to the volume of the river's water at this point, it is calculated that this fall is capable of producing a motive force exceeding one million horse-power. Carefully made measurements establish that the first fall of the Manicouagan, about twelve miles from the sea, and 110 ft. in height, can develop 331,456 horse-power. The second fall, some ten miles above, is 165 ft. high and could develop a force exceeding 500,000 horse-power. The power of the third fall, 115 feet in height, and about thirty miles further up, is estimated at 265,000 horse-power; that of the fourth fall, some sixty miles still higher, where the river makes a plunge of 175 feet, might produce a force equal at least to 220,000 horse-power. That is to say, that taking only the principal falls in the first 125 miles of its course, reckoned, from the sea, the Manicouagan river could furnish to manufacturing industries a motive force of 1,316,456 horse-power. A couple of miles from the first falls of the Manicouagan, on the the west side, there are, on the Outardes river, falls of a force of 180,992 horse-power. On all the other numerous rivers emptying into the Gulf of St. Lawrence, on the north shore, there are at a little distance from the coast, falls capable of furnishing considerable motive power. Those of the Portneuf and Ste. Marguerite rivers have been purchased by capitalists for the purpose of establishing pulp and paper factories there.

On the Saguenay river proper, the first falls are met with about six or seven miles above the town of Chicoutimi. The measurements made by the officers of the Department of Crown Lands establish that these falls have a power equal to 92,000 horse-power. At Chicoutimi itself, the fall formed by the river of that name furnishes the motive power for a pulp mill of a capacity of over 100 tons per day, and the force necessary for the electric lighting of the town. On the Grand Peribonka river, about fifteen miles from the shore of Lake St. John, there is within a distance of a dozen miles, according to measurements made by Government officers, a series of seven falls giving, respectively, the following horse-power: 39,000, 36,850, 36,500, 35,000, 18,425, 61,500, and 73,750, or a total of 301,025. On the Little Peribonka, some ten miles to the west, there are falls which are actually being utilized for a pulp mill. On the river Mistassibi, about fifteen miles further west, there is a water-power equal to 11,750 horse-power. One mile further is the first fall of the river Mistassini, of a force of 42,988 horse-power. On the Chamouchouan, there are several falls of a power varying from 10,000 to 60,000 horse-power. From a calculation published in the Report of the Commissioner of Crown Lands for 1898, it appears that a line drawn around Lake St. John, a dozen miles to the north, some thirty miles to the northwest, fifty to the west, two to the south, and about ten to the east, would take in water-powers of a collective capacity of 653,248 horse-power.



Sketch Map of the Province of Quebec, Showing the Location and Power of a Few of the Unappropriated Water-powers of the Northern Regions. The Shaded Parts are those now under Timber License.

On the St. Maurice, omitting the water-powers of lesser importance, there are the Shawinigan Falls, capable of developing

250,000 horse-power, those of Grand Mère of about 40,000 horse-power, those of Grandes Piles, 23,000 horse-power, and those of La Tuque, of 79,000 horse-power. These four water-powers are spread over a distance of 75 miles.

On the Richelieu, the falls of Chambly Basin are utilized to furnish electric light and power to the city of Montreal, and provide about 21,000 horse-power.

On the St. Lawrence, the Cascades and Coteau Rapids, some thirty miles from Montreal, and those of Lachine, in the immediate vicinity of the city, are capable of producing an immense sum of motive power.

The Ottawa is, so to speak, a long series of water-powers; the great volume of the waters of this river, which, from the measurements of Engineer Russell, has a flow of 2,100,000 cubic feet per minute, gives to the slightest fall a considerable force. The damming of the Carillon Rapid, whose fall is 21 feet, and of that of Grenville, whose descent is 45 feet, would furnish a vast sum of power for industrial purposes. The first of these rapids is situated 27 miles from the mouth of the Ottawa, and the second about five miles further up. Mr. Surtees, the engineer, estimates at 60,000 horse-power the capacity of the Chaudiere Falls, great and little, actually not used, between the town of Hull and the city of Ottawa. He gives the following figures for some of the falls which are found higher up: Deschenes, 15,000 horse-power; the Chats, 141,000; Portage-du-Fort, 49,000; La Montagne, 62,000; Grand Calumet, 186,000. Further up there are the water-powers of La Cave, 8 300 horse-power; Des Erables, 11,300 horse-power, and of La Montagne, which are considerable. Above Lake Temiscaming, the series of falls known under the name of Rapids des Quinze, might furnish from 30,000 to 45,000 horse-power.

Engineer Surtees assigns to the principal water-powers on the lower portion of the river Lièvre the forces following: Buckingham, 9 000 horse-power; Rhéaume, 4,000; Dufferin, 12,500; Upper Falls, 12,500; Cascades, 2,000; High Falls, 36,000 horse-power.

On the Gatineau, in the first fifty miles from its junction with the Ottawa, the same engineer has noted the following water-powers: Farmer's Rapid , 24,500 horse-power; Chelsea Mills, 47,790; Eaton's Chute, 24,508; Cascades, 14,000; Wakefield, 12,000; Pangan Falls,, 73,500. There are on this same river, further up, the falls of Maniwaki, of La Montagne, of Castor Blanc, Betobee, Big Eddy and several others which form water-powers of enormous capacity.

But all this is eclipsed by the water-powers of the Nottaway and the Rupert rivers, in the Abitibi territory. On the first sixty miles of the Nottaway, from its source at the Height of Land, there are several water-powers varying from 250 to 750 horse-power, and ten miles lower, at Red Flower Hill Portage, there are cataracts of 66 feet terminating in a steep fall of 14 feet, of a total capacity of 30,000 horse-power. Ten miles below this, the superb falls of Kiask Sebee, 30 feet in height, can furnish 13,000 horse-power, and a couple of miles further down, there is another power equal to 4,000 horse-power. The outlet of Gull Lake, about 155 miles from the Height of Land, would give by a single damming a force of 85,000 horse-power. After leaving Lake Mattagami, the Nottaway forms by its falls and great cataracts, the following water-powers: At 150 miles from the Height of Land, 50,000 horse-power; at 175 miles, 106,000 horse-power; at 200 miles, 275,000 horse-power; at 330 miles, 400,000 horse-power. As may be seen, on this stretch of about a hundred miles, the water-powers of the Nottaway have a collective force of nearly 1,000,000 horse-power.

On the Rupert, the falls of Smoky Hill are situated at the head of tide-water. They have a height of 52 feet and a capacity of 300,000 horse-power. In the next fifty miles, there are on this great river the following water-powers; Falls of Cat Portage, 74 feet high, 419,025 horse-power; Falls of the Four Portages, one of 63 feet, 340 000 horse-power; one of 80 feet, 453,000 horse-power; one of 32 feet, 177,000 horse-power. Some twenty miles further up, there are the Falls of Oatmeal Portage, 18 feet high, 100,000 horse-power, and about twenty miles still higher, a fall of sixty feet and 329,818 horse-power. Those water-powers are spread over a space of about fifty miles and have a collective force of 1,128,843 horse-power.

On the East Main river, which runs parallel to the Rupert, some fifty miles more to the north, there are water-powers as numerous and as powerful.

All those water-powers, except on the St. Lawrence and Richelieu, are on rivers where spruce for the manufacture of pulp exists in exhaustless quantity, which shows the possibilities of the Province of Quebec, as regards the pulp and paper industry.

NEW INCORPORATIONS.

Mageau, Leblanc Lumber Co., Chapleau; capital, $40,000. Z. Mageau, J. E. Serre, O. Laberge, S. Mageau, Sturgeon Falls; M. A. Leblanc, and others, of Chapleau, Algoma, Ont.

The Horticultural Publishing Co., Toronto; capital, $30,000. H. Jones, Augusta; W. H. Bunting, St. Catharines; A. W. Peart, Tp. Nelson; J. H. Dunlop, H. J. Simmers, Toronto.

The Dairyman Publishing Co.; capital, $30,000. R. G. Murphy, Tp. Elizabethtown; J. R. Dargravel, Tp. Crosby; W. Eager, Tp. Williamsburg; J. N. Paget, Tp. Canborough, Haldimand, and W. H. McLeod, London.

Dominion.—The Argus Publishing Co., Montreal; capital, $10,000. H. Dalby, J. Carleton, T. F. Tupholme, J. J. Brosseau, and J. E. Perrault, Montreal. To carry on the business of printers and publishers.

The Grand Falls Power Company (Limited), with a total capital stock of $200,000, headquarters at the town of Grand Falls, N.B., has obtained a Dominion charter to construct a power canal and other works necessary to generate power; to acquire and manage mills and factories for the manufacture of pulp-wood, sulphite, paper cardboard; to operate mills and factories for the manufacture and production of lumber and all articles of wood, and to sell timber, lumber, and all articles made therefrom; to carry on the business of general storekeeper. The charter members are: Sir William Cornelius Van Horne, of the Canadian Pacific Railway; the Hon. Redfield Proctor, United States Senator, of Proctor, Vt.; Richard Bladworth Angus, of Montreal; Hugh Havelock McLean, barrister, of St. John; Frank Charles Partridge, attorney-at-law, of Proctor; Frank Ray Kimbley, attorney-at-law, of New York, and Ernest Alexander, of Montreal.

The Western Canada Pulp and Paper Company, Limited, has just been chartered in London, Eng., with a capital of £450,000. The company is authorized to manufacture and deal in paper, pulp, paper makers' materials, and to adopt an agreement with G. H. White, E. C. Leachman, and R. A. Workman. The signatories are to appoint a director to be resident in British Columbia. Remuneration, £2,200 per annum and a share in the distributed profits. Registration office, is at 806 Salisbury House, London Wall, E.C. The location of the mill will be at the mouth of the Powell river, in British Columbia, eighty miles from Vancouver city. On the banks of the river the company owns 166,000 acres of pulp-wood lands. Because of its location, on the Pacific, the product of the mill will seek a market in Australia, New Zealand, Japan and other Eastern countries. The company will make news. On the board of directors are representatives of the London houses of James Spicer & Sons and Edward Lloyd, Limited, both of which concerns are large distributors of newspaper, especially in Australia. William Curtis Ward, of London, England, is chairman of the board of directors. James Whyte, of Lloyds, is said to represent that well known house on the board. Mr. Whyte was in Canada for some time looking after the interests of his house in the proceedings in the Sturgeon Falls mill property. Work on the mills of the Western Canada Pulp and Paper Company will be commenced at once, and they are to be finished in 1906 or early in 1907. At first the daily production of the plant will be only 60 tons.

The Paper Colorist.

The practical difficulties in the way of dyeing pulp up to sample, to exactly hit the right shade or correct it in the course of manufacture can only be overcome by experience. Most of the color makers supply books of samples and full directions with their colors; these, however, should not be too rigidly adhered to, as the condition of the pulp considerably influences some of the colors. Some of the most beautiful colors, such as methyl violet, fuchsine, eosine, Victoria green, and Malachite green rapidly fade. For fast red or rose colors rhodamine and crocein scarlet are suitable. Ultramarine is considered fast to light, but can be replaced by Paris blue which inclines to a reddish shade; if a greenish shade is required a suitable addition of chrome yellow is made. Unfortunately these green colors are never so bright as those obtained with the quickly fading aniline colors. For fast yellow and orange color chromes can usually be employed for more intense orange with the addition of aniline orange which is almost fast. The latter alone gives a fine bright color, but with any quantity it causes frothing on the machine and interferes with the sizing. For intense orange tones a very large proportion of dye is required, which considerably heightens the cost of production. With one per cent. of dye on the weight of the paper a good orange can be obtained, and the cost is moderate in this proportion, but for really deep shades five or six times this quantity is required.

With intense colors, the felts, even the cylinder felts, get so impregnated with color that much time was lost in getting them clean. Although for light shades colors go a long way, for deep ones the amount required is so considerable as to increase the price of paper to from three farthings to one penny the pound. Fuchsine, methyl violet, and some green aniline dyes go a long way and do not run expensive even when deep shades are wanted, but they are too fugitive for most purposes. Further, these and some other aniline colors which dye mechanical wood, unbleached and partially bleached cellulose and jute more strongly than well bleached stuff, so that where mixtures of this kind are employed, great care must be taken to avoid getting an unevenly dyed product. Indeed, wherever an evenly colored surface is required, unbleached material must not be mixed with the bleached.

The use of aniline colors offers no particular difficulties so long as care is taken to see that the pulp still re-acts acid after the sizing; that is, that excess of alum is present before adding the dye. It is a good plan to add a little after the dyeing so as to avoid any alteration in color. Many manufacturers buy chrome colors in the form of paste to insure their uniformity. As, however, the price of the color in this form is high, others make the color themselves. Generally for one pound of potassium chromate, four pounds of lead acetate (sugar of lead) are taken. They are dissolved in separate vessels and then mixed together in a large tub, when the sulphur yellow coloring matter is formed. If a redder or golden yellow shade is required, less sugar of lead should be taken, or the latter replaced by lead nitrate. As the coloring matter is a compound of lead, it is heavy and rapidly settles in the tub. Great care must be taken to see that it is kept well stirred and evenly mixed, or a variety of tinted papers will result. It is cheapest and safest to prepare the color separately for each beaterful, and add it direct to the beater.

It is also recommended to prepare only the sulphur yellow shade of the chrome color and adjust the other shades by addition of small quantities of Paris blue, crocein scarlet, or aniline orange. In preparing the chrome yellow, each ingredient must first be completely dissolved in hot water in separate tubs. The potassium chromate solution is now poured into a third tub, and on to this the sugar of lead as rapidly as possible, and in one lot, stirring all the while. If it is poured in and mixed slowly a redder shade is obtained, as a part of the potassium chromate combines with the sugar of lead before the rest was added. If it is desired to mix the two slowly they must first be allowed to cool. This process is cheap and rapid, and can be depended on for yielding a uniform product, but the tubs and stirrers must on no account be interchanged, but used always for their respective chemicals.

The mineral earth colors are cheap, permanent, fast and suitable, as however they do not go very far they do not offer any particular advantages. They add to the weight of the paper, and must be reckoned for in the loading. They are best suited for gray or light brown shades. For this purpose it is more economical to use mixtures of black, red and yellow colors adjusted to get the right shade than gray or light brown colors themselves, as much less of the former will be required to produce the same depth of color. Only in special cases should the amount of mineral earth color exceed 5 per cent. of the weight of the paper, and for deeper tones dyes should be used. With regard to economy it is cheaper in the case of a loaded paper to use china clay and an aniline dye than large quantities of mineral earth colors. As a rule it is sufficient if a mill has three different mineral earth colors in stock—Frankfurt black, English red and golden oxide. The latter is cheaper than other ochres as regards purity of color and efficiency. In buying chemicals purity of the materials is the first consideration, and absence of hard particles, such as sand or coal dust; the later is particularly apt to spoil the paper, and is not easily removed by filtration. Not only in the case of the mineral earth colors, but as a general rule the fewer the colors the better. The aniline colors, eosin, crocein scarlet, rhodamine, Rhine blue, Victoria or Malachite green, auramine, metanil yellow and orange will suffice.

When some special new color is required it is best to send a sample to the dye manufacturer, not forgetting to mention what are the requirements with regard to strength, fastness to light, and what raw materials are to be used. The dye manufacturer is usually in a position not only to select a suitable dye, but also to give approximately the quantity which will be required, as they have considerable experience from frequent inquiries of this nature and costly experiments in the mill will be unnecessary. For green tints chrome yellow may be used with a suitable addition of Paris blue; the latter is dissolved in water at a temperature not exceeding 110-120° F., and the water must not be alkaline or loss of color results. Sometimes it dissolves with difficulty, so that some mills prefer to use it in form of paste. In using ultramarine, after well mixing with water the whole should be filtered through as fine a sieve as possible. The finest machine wire is suitable, as the ultramarine has a tendency to ball into the little masses which leave unsightly specks or hair-like marks in the paper. For use in shading with paper a small addition of a red dye as crocein scarlet or better, rhodamine, is required. With cheaper papers ultramarine may be replaced by Rhine blue or Paris blue, in the latter case using more of the red dye to counteract the greenish tinge. Ultramarine should be tested as to its behaviour to alum, and too large an excess of alum must be carefully avoided, as this color is sensitive to acids. If too much alum has been taken a smell of sulphuretted hydrogen is noticeable. For the very best papers cobalt blue or smalt is still used in place of ultramarine as being absolutely permanent and fast. It does not, however, go as far as the latter, and is very expensive.—Papier Zeitung.

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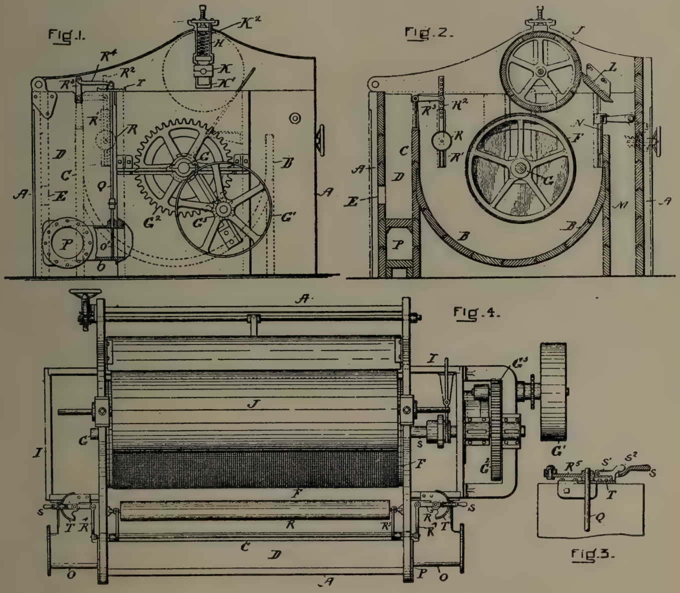
--Henry Dalby, editor of the "Argus," of Montreal, and formerly editor of the Montreal Star, has been appointed editor of a paper called Canada, to be issued in London, Eng., under the auspices of the Harmsworths.

Pulp Separator.

An invention relating to machines for reducing the consistency of wood pulp by removing a portion of the water or other liquid mixed with the pulp, either in the process of grinding or digesting by chemicals or in subsequent stages of manufacture, has been patented in the United States by Kimball B. Fletcher, of Lancaster, N.H. It consists, essentially, in certain mechanism for automatically regulating the flow of the liquid pulp, keeping the pulp at a uniform height, and rendering the operation of the machine steady and uniform. In the accompanying drawings, Fig. 1 is a side elevation of the machine. Fig. 2 is a vertical transverse section in a line parallel with the side of the machine. Fig. 3 is a detail of a portion of the regulating mechanism. Fig. 4 is a top view of the machine with the cover removed.



A is a rectangular water-tight receptacle or tank, preferably made of wood, within which is the vat B, the bottom of which is substantially semicircular in cross section, and the front and back walls of which are below the level of the top of the tank A. A short distance from the front wall of the tank A, and forming a part of the front wall of the vat B is the upright distributing board C, forming, with the front and side walls of the tank A, a receiving trough D, into which the liquid pulp flows through the opening E, and, striking against the distributing board C, is distributed over its surface, and flows in a uniform sheet over its top into the vat B.

In the vat B is a cylindrical screen F, mounted on a shaft G, having its bearings in the sides of the vat, to which rotary motion is given by means of the driving pulley G^1 through the medium of gears G^2 and G^3. The shaft is placed somewhat to the rear of the middle of the vat, making the periphery of the cylindrical screen eccentric to the curve of the bottom of the vat. The screen F is covered with wire cloth, which is of a suitable mesh to allow the water from the pulp to drain readily into the interior of the cylinder. The cylindrical screen F is open at both ends. Opposite to the lower part of the cylinder are openings in the sides of the vat B, communicating with side vats I I, one at each end of the cylinder. Suitable packing rings, preferably made of canvas and not shown in the drawings, encircle the ends of the cylinder and prevent the pulp from passing from the main body of the vat through the openings into the side vats I I.

A couch roll J, having its surface covered with felt, is mounted above the screen F, and rests upon it with sufficient pressure to be rotated by the movement of the screen. The ends of the shaft upon which the couch roll is mounted are supported by boxes K, sliding in vertical ways K^1 and suspended from springs K^2, which relieve the screen from the full weight of the couch roll. As the cylindrical screen F revolves, a certain amount of the thickened pulp from which the water has been drained is taken up on its surface, from which it is removed by the couch roll J. As the couch roll J revolves, the pulp on its surface comes in contact with the wooden blade or "doctor," by which it is scraped off into the discharge trough M, from which it is removed in any convenient manner.

If it is desired that the pulp should be discharged from the vat B in a liquid form, it is allowed, after passing under the cylinder F, to flow over the back side of the tank into the trough M. If, however, the pulp is to be reduced to a comparatively solid form, the back side of the vat B is raised by an extension board N, whose ends slide in vertical guides in the ends of the vat B, and which is raised or lowered by any convenient means. The pulp is then held back in the vat B, and the solid portions removed by the action of the couch roll, as above described. The liquid strained from the pulp by the action of the screen F passes into the side vats I I, and thence through elbow pipes O O, which are connected by a cross trough P, so that the liquid from both ends of the cylinder may be discharged from a common outlet.

In each of the elbow pipes O O is a gate O^1, mounted on a vertical shaft Q, extending to a point near the top of the tank A. By means of these gates the passage of the liquid through the elbow pipes is regulated. The opening or closing of these gates is effected by means of the cylindrical float R in the vat B. This float consists of a hollow metallic cylinder with closed ends, adapted to float at or near the surface of the pulp in the vat B. At the ends of the float are projections fitting loosely in vertical guides R^1, attached to the inside of the vat B. At each end of the float is an upwardly projecting arm R^2, pivoted on a bell-crank lever R^3, which operates an arm R^4 on the outside of tank A, which in turn is pivoted to the crank R^5, attached to the upper end of the vertical shaft Q, upon the lower end of which the gate O^1 is mounted.

The arrangement and operation of the parts are such that when the pulp begins to accumulate in the vat B the float R rises, thereby opening the gates O^1 and permitting the liquid to flow more rapidly from the interior of the cylindrical screen F, thus accelerating the operation of the screen in removing the liquid from the pulp. On the other hand, when the level of the pulp in the vat G falls below the normal level, the float R falls, thereby closing the gates and checking the outward flow of liquid, thus retarding the action of the screen F. By these means the pulp in the vat B is automatically kept at a uniform level and the flow of the pulp is uniform and constant.

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—The Inglewood Pulp and Paper Company is applying to the New Brunswick Legislature for an amendment to its charter.

Absorbency of Printing Papers.

Dr. Paul Klemm in the Wochenblatt, in recording tests made, says it is quite useless to determine the absorbency with water or writing ink, as their action upon paper is altogether different from that of the oily fluids which serve as a medium for printing inks. In other words, the resistance which paper offers to penetration differs considerably according as aqueous or oily liquids are used, and the absorbency for the latter cannot be estimated by tests carried out with the former. The most absorbent papers for oil are, however, the unsized ones, and thus far oily and aqueous liquids behave alike, but it often happens that hard-sized papers are as absorbent for oily liquids as others in which a much smaller proportion of size has been used. In particular, the absorbency of a rosin-sized paper for aqueous liquids is no guide as to its behaviour with printer's ink. Nor is this difficult to understand, when we remember that rosin can be easily wetted by oil, and this wetting of the fibres plays an important part in regard to the penetration of the paper by the ink. On the other hand animal size has the reverse effect, and hinders the penetration of the paper by the oily matters contained in the ink. This fact is of considerable importance in respect to the composition of art and other coated printing papers. Here the surface is coated with powdered mineral, held together by an animal size. The mineral powder of itself is powerfully absorbent for oil, and loading materials therefore increase the absorbency. In regard to the fibrous material, this is only of influence in so far that it affects the material of the paper. The density of the material plays an important part, for the greater the density the smaller the absorbency for the oily matter. The fibrous material that is so easily soaked with aqueous liquids appears to take up oil with great difficulty, and the limits of absorbency of various papers for oil are not so wide as those for aqueous liquids. To consider more closely how far serviceable printing is dependent on the degree of absorbency for oil, or what in practice is more usually known as the "pull" of the paper, we may say that the generally accepted view by which the greater the "pull" the better the paper does not always hold good. Printing ink consists of a colored powder in mixture with a suitable vehicle or medium of an oily nature. With a paper of a high degree of absorbency the oil is drawn out of the ink and soaked up into the paper, leaving on the surface a layer of coloring matter with insufficient of the oily medium to bind it, with the result that the ink, when dry, easily rubs off. With such a paper it is necessary to work with a relatively fluid ink. Under these conditions a positive advantage is achieved as the printing works better and a sharper definition of the letters is usually obtained with the more fluid inks. The fluidity of the ink must be suited to the pull of the paper. Of all considerations in this respect great importance must be attached not only to the porosity (with which the absorbency is closely related), but to the elasticity of the paper. On the latter depends the evenness of the impression in spite of unavoidable irregularities of the surface of the paper. The excellent effects obtained in art papers are due to the evenness of the surface, although the animal size employed reduces the absorbency. The extended use of art papers, in spite of many serious disadvantages, especially the way in which they reflect the light and tire the eye, can only be attributed to the even surface of the paper. The porosity is of importance in that it allows free access of air by which a rapid thorough drying of the color is effected. It is well known that the drying of the oils is due to a chemical oxidation which can only proceed in presence of air.

A too-absorbent paper is an actual disadvantage in some cases as it may cause the ink to show through in a way it would not otherwise have done. The oil penetrates into the paper and renders it translucent; this semi-transparency is a well-known property of oiled paper. If the paper is thin and the oil penetrates far there will only remain a relatively thin layer of opaque material to prevent the ink marks from showing through.

A good printing should not then be too absorbent for oil, and for working a suitably fluid ink is required. If the paper is thin these qualities become absolutely disadvantageous, and the ink begins to show through. What is most required of a printing is porosity and evenness of texture.

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China Clay in Cornwall.

"A land flowing with milk and honey" is a remark frequently heard from strangers on their first visit to the neighborhood of St. Austell, in which part of Cornwall the principal clay mines are located. Whilst honey is conspicuous by its absence, the milk-white china clay water which flows down the hills and valleys of the district is very suggestive of the expression.

St. Austell may well be termed the centre of the china clay industry, its narrow streets presenting a busy appearance as the numerous wagons pass through on their way to Charlestown, a little port where much of the clay is shipped.

China clay is a commodity that is associated more particularly with the potter's art, but its sphere of usefulness is not confined to the making of china and earthenware. It enters largely into the composition of a great number of manufactured articles; it is used extensively for bleaching and paper-making, and with the advance of scientific and technical knowledge its scope of usefulness is being continually augmented. The object of this article, however, is not to enumerate the various purposes to which the clay can be put, but rather to illustrate and explain briefly the modus operandi in obtaining it.

Kaolin, or china clay, was first discovered in Cornwall by William Cookworthy, a porcelain manufacturer, about 1745-50. It is defined as the felspathic portion of decomposed granite rock. The output at first was very small, but it has since developed into a large industry. Sometimes it is found within six feet of the surface, and at others the "overburden" is quite thirty feet deep. As the whole of this layer of earth must be removed before the clay can be obtained, the great advantage of its being found near the surface will be at once apparent.

To the uninitiated it is necessary to explain that in every clay work a permanent perpendicular shaft is sunk, in which is placed a pump, or "lift," as it is called. This shaft is put as near as possible to the edge of the bed of clay.

From the bottom of the shaft a level is driven towards the clay, at the extremity of which a hole or "rise" is worked up to the surface, thereby enabling the water when charged with clay to pass down the "rise," through the level into the shaft, when it is again pumped to the top.

All the water used in working china clay is conveyed in launders to the pit, and as it runs down the sides to the bottom, men are employed in breaking and continually moving the clay with broad picks. It is thus suspended in the water together with a great deal of sand, which, being of greater specific gravity, settles in the pit. This sand is loaded in small wagons, and drawn up an incline by the aid of machinery, and tipped over a "burrow" as refuse.

The water containing the clay flows down the shaft, being afterwards pumped up and passed through refiners, or "micas," to take out the refuse. These are narrow channels of wood placed side by side, about 20 feet long and 6 inches deep; the matter which settles in them is usually removed once a day. At the end whence the water passes out traps are fitted, which can be raised or depressed so as to regulate the flow.

From the "micas" the water is conducted to large "settling pits," and then to tanks adjoining the drying place. The pits are on a higher level than the tanks, consequently by mixing the clay with water it is made to run from one to the other.

After remaining in the tanks for about three weeks the clay is considered in good condition to be dried. This is effected by loading it (in a semi-solid state), in small wagons, which run on rails into the "dry."

At one end there are large fire-places, the flues of which traverse the whole length of the building, which varies from 150 to 300 feet. Fires are kept burning under the floor of clay, and by this means the superfluous moisture is driven off. The heat near the fires is so intense that the clay may be removed every day, but it usually takes three days before that at the farther end is fit for removal. This is facilitated by the clay being cut into squares before it is quite dry.

The process being completed, it is either shipped in the original blocks or packed in casks, or bags.

So much has the trade with America increased of late, that a special line of steamers now runs to Boston, the cargoes consisting entirely of clay. China clay is a commodity which has been imported at Portland, Me., ever since the ocean liner has been trading to the port, for nearly every arrival has a certain quantity of the freight abroad, but only in small quantities.

The clay has a good market in America, and the Furness-Withy Line has arranged for a monthly steamship service from Fowey to Portland, Me., and Boston, with cargoes of 3,000 tons of china clay, half to be discharged at Portland and half at Boston, and the first cargo of the new service is on its way across the Atlantic from Fowey. Hitherto the Furness Line has been sending steamers to Fowey for china clay cargoes, to ascertain whether there was sufficient for a regular service, and whether it was remunerative enough, and has evidently decided to give the new venture a trial by having a monthly service, and if the trade demands it they could place more vessels on the route. The results of this new service will be followed with keen interest.—Paper Makers' Monthly Journal.

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Will Maine's Woods Last?

Winthrop Packard is the author of a very interesting article in a recent issue of the Boston Transcript, under the above title, regarding the part the pulp mills are playing in the development of the country north of Bangor, Me. The author refers particularly to the wonderful growth of the town of Millinocket, while he says:

In 1900 the mill was well under way, and the town had 1,144 inhabitants. To-day it has about 3,500, and still growing. New houses go up, new stores are opened. Everything of course hangs on the pulp mill, but there are to-day three hotels with accommodations and conveniences equal to those of any Massachusetts city; twenty-three stores, four churches, high and common schools ensconced in a $20,000 school house, town water, a sewer system, gas and electric lights, a weekly paper and a brass band. Regarding the question whether the forests will stand the drain made upon them by the Millinocket plant and the other mills in the state the author says:

Mr. Ring, Forest Commissioner of Maine, estimates the present stand of merchantable spruce in the state, that is, trees nine inches in diameter, breast high from the ground, at 21,239,000,000 ft., board measure, that the annual growth is sufficient to warrant an annual cut of 637,000,000 feet without injuring the supply. The latest statistics for the whole state are those of the Government census of 1900, which gives the total spruce cut for logs during that year as 525,148,000 feet, for pulp, 132,679,500. This gives a total well within the limit; in fact, it gives a pretty considerable margin for increase. If the cut for the Millinocket concern was its full amount during that year all well, but it probably was not. If any was cut for this mill that year it could hardly have been the full amount, for the mill was not yet in operation. If, on the other hand, we have to add to that cut the 60,000,000 feet which this mill needs annually, we find the total reserve of spruce has been brought up and that it is a drawn battle between the growing trees on the one hand and the devouring mills on the other, with figures rather in favor of the mill.

But a study of figures in the Maine lumber industry adds other disquieting facts. During 1903 forty-eight saw and lumber mills were either built new or enlarged in the state. Not all these mills saw logs. About half of them simply work up the already accounted for lumber. Not all of them either use spruce. Some of them handle birch and hard wood. Yet with all this deducted, the fact remains that there is an increase in the spruce sawed as represented by these sawmills. A yearly increase counts for a good deal in the long run, especially when the margin of safety is already reached.

I find also an increase of four pulp mills during the same year. That does not mean so very much spruce, as these new mills are not very large, and some of them may use poplar. In the paper-making industry, poplar was for a long time the wood used, and only after it was found that by improved processes spruce might be made to yield better fibre did it have any rival. Now comparatively few mills use poplar, yet I find that the pulp cut for the state of Maine was something over twenty million feet, in 1900 of wood other than spruce. This was probably poplar. Yet with all the saving clauses we can insert we still find that the margin of safety in spruce growth is reached or passed at the present time by the amount cut to supply the saw and pulp mills, while a steady increase in both these destroyers is noticeable. Down river from Millinocket there are signs that another great pulp mill is likely to locate. Nobody has said anything, nobody ever does beforehand, but real estate in that region has risen mysteriously in value for some time, yet is being steadily acquired by some one. The water power is there, and the river which drains spruce-producing territory. Therefore, say the wise ones, this appreciation of land values under the circumstances can mean but one thing; another huge pulp mill is coming. The upper waters of the west branch are monopolized by the Millinocket mill, but there remains the east branch, draining an almost equally wide territory, and as yet not monopolized for pulp. It is quite likely that another year or two may see another huge mill located on the Penobscot, yearly devouring half a hundred million feet of spruce, and what then? Shall there be anything left of the forests after a few years of this?

Well, I think so. The very fact that the great pulp mills are sitting at the outlet of the woods and controlling hundreds of miles of territory is in itself a guaranty that spruce will always be plentiful there. It would be the worst of business folly to build manufacturing plants at an expense of millions of dollars in remote regions without first being sure that the raw material is to be obtained there in unfailing supply.

In the case of the Millinocket concern the forest reserve consists of more than eight hundred square miles of spruce-producing territory. Its logs start from the far north about Chamberlain Lake, receive reinforcements as they come from Chesuncook, Ripogenus, Ambajejus, Pemadumcook—lakes that are less difficult of navigation than their names—North Twin, Elbow, and Quakish, with hundreds of smaller ponds and streams. Yet if you stand near the mill and see the logs piled up for winter use, twenty million feet and more in the one largest log pile in the world, see the storage basin half a mile square frozen solid with logs, and see the mighty stream of them that floats day after day ceaselessly into the devouring jaws of the wood room you might wonder if even this great tract of forest land would hold out against so devouring a monster.

You will notice that these logs are

splendid specimens, all of them a foot or more in diameter and many of them much larger. A simple rule of the company provides for this, and in it lies the safety of the north woods so far as the lumberman's axe is concerned, for nowhere on their 500,000 acres may a log be cut that is not a foot in diameter breast high from the ground. The area controlled is so vast that while the mature trees are being cut from one part those on another have ample time to reach maturity.

According to the census of 1900, Maine had thirty-five pulp and paper mills, representing a capital invested of $17,433,160. Some of these mills control a forest reserve of their own. I think all the largest of them do, but the smaller ones do not, getting their spruce in the open market. Neither do all adopt the foot rule in cutting. Some accept the lumberman's definition of merchantable timber, which is trees nine inches in diameter at breast high. Others, I fancy, take what they can get and ask no questions, for conscience sake. But the tendency is certainly in the right direction. The supply of spruce must be constant if the mill is to pay, and the way to keep it so is to adopt strict forestry regulations and see that a new tree grows for every one cut down.

The pulp mills are dividing the control of the forests with the lumberman, but they too know the value of a constant supply of trees, and the two are beginning to work together toward reforesting rather than deforesting the wild regions of the state. This work is not all that it should be, yet. It is a bit haphazard and desultory, but it is an encouraging sign that it has begun at all. No doubt the future will see it systematized under one general plan for the state.

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Soda Recovery.

The up-to-date recovery plant, with its multiple effect evaporator, rotary hearth, and sludge vacuum pans, has not brought about a large increase in the yield of recovered soda, but it has increased the general efficiency of working to a considerable extent compared with the older methods of porian, stationary hearth, etc.

The treatment of lime sludge in vacuum pans or filters is quicker and more economical than any system where the sludge has to be repeatedly washed and emptied or dug out of pits. The point to be aimed at is to get the lime mud as dry as possible. With a good pump and a strong wire canvas filtering medium the moisture can be reduced from 25 to 30 per cent., once treating with hot water being sufficient; the whole operation of filling and emptying the pans taking a few hours.

In practice it is found that for uniformity of results the lixiviation of the recovered soda is much superior to the method of dissolving it in the caustic boiling pans. There is the advantage of working with a solution of known strength as against the weight of charges of varying percentages of alkali, and there is a less quantity of carbon to go forward.

The subject of carbon in esparto half-stuff is one that constantly comes up in the mill. The most careful and fine straining may fail to show its presence in the caustic lye, and close scrutiny with the naked eye will, perhaps, not detect the blacks, but when the so-called "dead" look is noticed in the bleached esparto, if some of it is examined with a powerful glass or microscope (low power), the unsuspected myriads of carbon points will often be revealed. In some cases the carbon exists in an amorphous condition. Sometimes the straining of the lye through a cotton filter will cover the latter a lampblack hue, showing that the carbon is as fine as smoke. The moral of all this is to free the recovered soda as much as possible from carbon before it comes in contact with water.

It may be assumed that very few

paper-makers associate the quaint blue color that tinges some recovered ash with a well-known pigment which they frequently use, but when, as is often the case, the ash is over-burnt, the fusing of the soda, sulphur and silica contained in it produce a species of ultramarine! An interesting side to soda recovery is the sources of loss. With a recovery of say 80 to 85 per cent.—the latter rather a fancy figure—where does the other 15 to 20 per cent. go astray. The two principal sources are, undoubtedly, the grass washing and the lime sludge.

The washing plant generally fails to reserve all the waste water, and the most careful washing consistent with practical working also fails to extract all the soda, some invariably going forward to the bleaching operation. From 12 per cent. to 15 per cent. may be assumed as being accounted for by the washing and lime mud, and the remaining loss spread over boiler and tank leakages, cleaning and flue. In some quarters the hearth flue, or rather the chimney has been made responsible for a chief loss of soda. The writer considers 2 per cent. a maximum proportion in this direction. A big loss would become self-evident. Take for instance a plant recovering 15 tons per week and assume a loss of 10 per cent. during incineration. In a year between 70 and 80 tons of soda would be emitted with the smoke, and the surrounding country would get a disturbing excess of alkalinity.

Probably most mills boil the grass with a small margin of soda over and above that required to effectively treat the material, and in whatever other direction this may be advantageous, it has the effect of keeping the extractive matter from settling out in the evaporator pipes. As little as .01 lbs. caustic per gallon is sufficient to keep the spent lye entering the evaporator in a fair state of fluidity. Workmen in charge of evaporators sometimes refer to liquor as being "dirty," and the consequent difficulty of getting the proper evaporation. Very often this is due to the absence of free soda.

The old custom for the caustic-sizer to apply the acid test to his liquor before emptying it to the storage tanks is still observed. It is of use, but it has often lost its value. This is likely to occur when the lye is of a dark color, and the fine particles of lime sludge cannot be discerned. The writer has known a 91 per cent. caustic liquor get a reboil because the workman mistook the effervescence caused by lime sludge to be sodium carbonate. — Paper Makers' Monthly Journal.

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Chemical Reagents.

The day has gone by when a paper analyst had to be an expert botanist to be able to tell the various kinds of fibre employed in the manufacture of paper from one another. By degrees reagents have been discovered which much facilitate examination of the several species of fibre, and colors may be now almost entirely trusted to in order to recognize the particular kind of fibre which is being dealt with. At the present day the investigator need have no accurate knowledge of the structure of the fibres; all he requires is a good color scale to enable him to carry out the most usually required analysis. If, however, further information is required than that which a merely primitive differentiation affords, then the aid of reagents must be invoked.

The requirements which a reagent ought to fulfill are: a wide range of distinct differentiation, complete permanence of the fibre preparations stained with it, and lastly, ease of application. Unfortunately, no reagent has as yet been discovered which answers completely all these three requirements, but we may be well content with what has been done already. It may, perhaps, be well to discuss the properties of the several reagents in use somewhat fully, as the chemical properties of the stains commonly employed are not known to every works chemist, a circumstance which may sometimes lead to his being deceived in his expectations.

A class of reagents which are both easy to use and possess the power of differentiation over a wide range are the various preparations of iodine. The odine in zinc chloride was a great advance on the old well iodine in potassium odide, and is one which affords complete information for the testing of normal papers. In these papers, as a rule, only three materials are employed which are required to be distinguished from one another, namely, rags, celluose (wood and straw), and mechanical wood, and each of these three kinds gives quite different colors, which can be readily distinguished. The rag fibres are colored reddish brown, the cellulose bluish violet, and the mechanical wood yellow, each color being readily disinguishable. The fact that the different kinds of cellulose are stained of somewhat similar color is not of much importance, as the case is not one of a determination of the composition of the paper, but merely a test to determine he class of fibre employed.

When further information is required, hen better differentiation is given by means of iodine in magnesium chloride, odine in calcium chloride, but most disinctly by iodine in calcium nitrate. By his latter both bleached and unbleached pine wood cellulose are colored differently, a fact which should be of interest to paper makers. Again, pine wood, poplar wood cellulose, and straw celluose can be readily further distinguished rom one another.

Turning now to the iodine preparaions they all have a common disadvantage, i.e., they perish, or in other words, he permanence of the stained specimens of fibre is not great. Firstly all the stains produced by iodine on cellulose are fugitive, and secondly, the hygroscopic constituent, such as zinc chloride, magnesium chloride, or calcium nitrate, absorbs moisture from the air and the preparation gradually deliquesces. This fact is one which a paper analyst should be acquainted with, as a preparation which looks one thing when just made will not look the same thing at all a day or so after. The iodine solution itself is very stable; there is no necessity whatever to keep the bottle containing it in a dark cupboard or box, all that is necessary is to keep the bottle carefully stoppered and away from direct sunlight. The mixture of zinc chloride and potassium iodide or calcium nitrate and potassium iodide scarcely decomposes at all, and a bottle of either mixture may be easily kept for some years.

As to the manipulation of the various iodine preparations in common use much need not be said. The usual method is as follows: A corner of the sample of paper is moistened and a portion of the edge teased out with a needle. The still partially cohering fibres are now dried with a strip of filter paper pressed down tightly on to the slide, and a drop of the reagent added. The preparation is then thoroughly teased out with two needles and the cover glass put in place. The excess of the reagent will escape beneath the edge of the cover glass and must be carefully absorbed by a strip of filter paper so as to keep the cover glass in position. The tufts of fibre in a properly prepared specimen should be well teased out so as to leave no opaque patches, and there must be no air bubbles left between the fibres.

With iodine in zinc chloride the coloration takes place immediately; in the case of the other iodine preparations, such as iodine in calcium nitrate, half a minute or thereabouts should be allowed to elapse before putting on the cover glass, as the liquid does not penetrate the walls of the fibre so quickly. Specimens stained with iodine must always be examined under a cover glass, as iodine volatilizes and the color is consequently not permanent. The hygroscopic mass also rapidly deliquesces, and the yellowish reagent obscures the color of the stain. I have personally prepared various other iodine reagents with a view to obtain further differentiation, but none have yielded better results than iodine in calcium nitrate; the only one which afforded a particularly marked distinction between bleached and unbleached pine cellulose was iodine in aluminium chloride.

A whole series of iodine reagents may be prepared, bearing in mind always that they must consist of a mixture of a hygroscopic substance and potassium iodide solution. The various hygroscopic substances influence the color of the stains produced by the iodine, and may possibly afford more or less power of differentiation. As already stated, the iodine preparations stain easily and quickly, and their manipulation is very simple; their great disadvantage is, however, that the colors produced are not durable. The organic dyestuffs, on the other hand, have the advantage that the colors produced by them are perfectly permanent; their only disadvantages are that their manipulation is somewhat more troublesome, and in cases of complicated staining take more time. The organic colors are also more used for the preparation of standard or reference specimens, and in exceptional cases where the information afforded by iodine is doubtful or ambiguous, such as in mixtures of linen and cotton, particularly when these latter are present in a fibrous condition. The use of these colors also requires more care in handling them.

Again, it is necessary to know first approximately what material is being dealt with, and for this purpose an uncolored preparation is first made. Examination at this stage with polarized light is of great assistance, as the many varieties of fibre are optically active in very different degrees of intensity. If, for example, the nicols be turned at right angles to each other so that the whole field of view is dark, it will be seen that hemp and flax fibres appear as highly colored bodies, and if the specimen be rotated give rise to a wonderful play of colors. The microscope used for this work must obviously be provided with a polarizer, an analyser, and a turn table. Jute gives a somewhat lower polarization color, cotton and wool still less, and cellulose is quite colorless. The structural details are prominently brought out, so much so that after continued practice a qualitative analysis can be made with comparative accuracy without further examination.

This preliminary analysis decides the choice of the stains to be subsequently employed. The following is the method usually adopted: The fibres are floated in a drop of water on the slide and a minute fragment of the reagent added. As a rule, it is necessary to very slightly warm the preparation at this stage, and in the case of some colors a small quantity of soda or acetic acid must be added. When the fibres are thoroughly stained they are cautiously and carefully washed, care being taken that none are washed away. When the washings are quite colorless the specimen may be examined; a cover glass is not absolutely necessary, but is preferable as the fibres lie more level. Any dyestuff only yields one color, and consequently if a mixture of fibres has to be differentiated additional colors must be employed. A single color, may, however, suffice in some cases, but the analyst will require higher training than is absolutely necessary in working with iodine in zinc chloride.

A concrete example or two may perhaps be of service. Take, for instance, a pure rag paper. The only question to be answered here is whether linen or cotton has been used, and how much of each. The best color to use for this purpose is benzoazurin, the specimen being well warmed and a trace of soda added in order to render the color more intense. The light should be passed through the polarizer and the specimen examined by singly polarized light. If now the slide carrier be slowly rotated, it will be seen that the linen is strongly dichroic, while the cotton is only slightly so. The distinction thus afforded is sufficiently great in all ordinary cases to allow of an accurate qualitative analysis being made of the two varieties of fibre. The rag fibres are alternately dark blue and nearly colorless, whereas the cotton fibres are nearly the same color.

Another example which will serve as a type is a mixture of mechanical wood, cellulose and rags. The colors for this are benzobrown and benzoazurin. The specimen is first deeply stained with benzobrown and washed, but not completely. It is then cautiously stained with benzoazurin without the addition of soda, gently warmed, and then superficially examined through the microscope. If the cellulose is not distinctly blue the specimen is slightly stained again and well washed.

The differentiation is now as follows: The mechanical wood is brown, the rags brownish blue to parti-colored, and the cellulose blue. Both the linen and the rags differ also in dichroism.

If a specimen so stained be compared with one stained with iodine in zinc chloride or iodine in calcium nitrate, the result is decidedly to the advantage of the latter; the former is, however, absolutely permanent, and with sufficient practice quite as accurate. The choice of any particular reagent is, as in many other things, a matter of taste; special circumstances may also render one or another more suitable as the case may be. The fine permanent colors yielded by the organic dyestuffs and the largely increased transparency and clearness of specimens of fibre stained with them, much facilitate the accurate examination of the structure of the fibres.—E. L. Selleger, in Der Papierfabrikant.

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A Veteran Paper Maker.

From London is announced the death of Mr. Leonard Stephenson, at the age of ninety-three years. He was one of the workers with John Dickinson, the founder of the firm of John Dickinson & Co., Limited, paper makers, of Croxley, Herts. This firm recently celebrated its centenary. Mr. Stephenson was in charge of the engineering works at Nash Mills, and for some years under the personal instructions of John Dickinson was engaged in the construction of various kinds of machinery. Mr. Dickinson, it may be mentioned, introduced many inventions. One of the most important of these dates from 1817, and relates to the manufacture of paper for copper-plate printing by "a process similar to veneering in cabinet maker's work." Two webs of paper, made on different cylinders, one of very fine material, for the face of the paper, and the other coarser, for the backing, were united at the machine, and not only a thicker, but a better paper for the reception of impressions of engraved plates than any hitherto made by machinery was thus produced. The process is still employed by the existing firm of John Dickinson & Co., Limited, and in a modified form is used in America.

Another invention, patented in 1824, related to cutting cards by machinery, by means of circular cutters, a process now universally adopted. Under the same patent was a machine for continuous pasting of webs of paper together, so as to form cardboard or pasteboard. This process is also still in use, though, of course, some modifications in the machinery have been introduced. Another of his inventions was a cylindrical knotter or strainer for purifying pulp, which was the precursor of the numerous other forms of revolving knotters that have been in use, and the principle of which has been more than once re-invented. This was patented in 1832.

The production of a paper offering securities against forgery also occupied Mr. Dickinson's attention, and he devised a process for the introduction of cotton, flaxen or silken threads into the body of the paper, which, though first patented in 1829, was not brought to perfection until ten years later, when it again formed the subject of a patent. On the introduction of the penny post, about 1840, envelopes and flat sheets of note paper were sold by the post-office to the public, and, to prevent spurious imitations, the paper was manufactured so that each envelope contained within it two silk threads, one of pink and the other of twisted white and blue, and each sheet two threads, one blue and white, and the other pink and white. Exchequer bonds were printed on a thicker paper, in the body of which seven or eight threads of colored silk were imbedded, the arrangement of the colors varying with each issue. The Mulready envelopes and covers, now much valued by collectors, were made of paper of the kind just mentioned.

Of other ingenious contrivances may be mentioned the application of magnets to the extraction of small particles of iron from the pulp, the process of continuous sub-sizing with gelatine at the machine, and, if tradition speaks truly, that of the continuous drying of paper, as made by a series of cylinders heated by steam. Mr. Stephenson was identified with many of John Dickinson's inventions, and his work was recognized by the firm, from whom he enjoyed a handsome pension during the last eighteen or twenty years.

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Economical Digesting.

Among the patents recently issued is one to Robert Roe, Jr., of Amberg, Wis., for improvements in the process of manufacturing sulphite pulp. In his specifications Mr. Roe describes his process as follows:

"My invention relates to processes of making fibre of pulp for the manufacture of paper from wood such as spruce, hemlock, or poplar. In these processes the wood is cut into small chips and treated in closed vessels, commonly called digesters, being reduced therein to fibre by the action of suitable chemicals, such as caustic soda, or the sulphites of lime and magnesia, aided by the application of heat, usually applied in the form of steam, which is introduced either directly into the digester itself or into a jacket enclosing or surrounding the digester. The object of my invention is to provide a method by which the digesting of the wood may be accomplished in a shorter time and in a more economical manner than hitherto.

"In the so-called sulphite process of the manufacture of wood paper pulp or fibre the wood chips are digested by a cooking liquor, which consists of sulphurous acid combined in certain proportions with a suitable base or bases, such as lime and magnesia, employed in the form of dolomite. This cooking liquor has commonly been prepared of the strength required for the digesting process, modified, however, in some instances by forcing into the acid already prepared and stored for use that portion of the sulphurous acid gas which is set free by the action of the heat in the digester, and which accumulates in the upper part of said digester and produces gas pressure. This gas pressure is relieved by blowing out in order to allow free admission of steam at the bottom of the digester. This blowing of gas from a digester (in which the cooking process is going on) into another receptacle, which contains the stored liquor, is called reclaiming the gas.

"In my improved process the cooking liquor is preferably made of a strength greater than is actually required for the cooking of the wood, and afterward as it is being introduced into the digester it is diluted to the degree which is actually required for that purpose by means of water previously heated. For the purpose of heating this water I prefer to use either a tank (of wood or other suitable material) or a closed vessel, in which the water may be heated under pressure to the desired temperature. Heat is applied in any suitable manner, preferably by the introduction of steam. The steam which serves this purpose has heretofore been blown out into the external atmosphere as waste or exhaust steam after the cooking process has been completed; but as the contents of the digester are discharged into the receptacle provided for that purpose, commonly called the blow pit, I introduce a portion of this surplus steam into a vessel, which contains water, and utilize to this extent the exhaust steam to heat the water. This vessel is connected by a pipe with the digester at any convenient point near the top thereof, or with some of the digester attachments.

"In my improved process the digester is charged with the chips or small pieces of wood in the usual manner; but instead of running the cooking liquor into the digester at the top, as is commonly done, I prefer to introduce the liquor into the digester at the bottom, together with water (heated as above described, or in any other suitable manner), or as close as convenient to the place where said water is introduced. The rate of the flow of the cooking liquor and of the heated water is regulated so that the quantity of hot water required for diluting the liquor to the proper degree of strength is run into the digester in about the same length of time as is required to run in the liquor itself.

"If the water is heated in an open vessel its temperature, of course, will not exceed 212 degrees Fahrenheit; but if heated in a closed vessel capable of sustaining steam pressure the temperature of the water may be greatly increased, and preferably should be raised to such a degree that when the cooking liquor and water have been introduced into the digester the temperature of the contents of the digester is about 212 degrees Fahrenheit. As a considerable time is required to reach this temperature in the present processes, the introduction of heated water, as I have already described as a part of my improved method, greatly reduces the length of time for the digesting operation, and in consequence materially increases the per diem product of the digesting apparatus.

"When the digesting process is nearly completed, I begin to blow steam from the digester through the pipe into the water-heating vessel, and continue to do so until there is only a sufficient steam pressure remaining in the digester to effect the discharge of the contents there into the blow-pit. The water thus heated by the steam blown into it, as above described, is used both to heat and dilute the cooking liquor, being mixed or mingled therewith as the liquor is introduced into the digester, as before explained.

"When the cooking liquor contains uncombined gas in solution, such as sulphurous acid gas in the free state, it cannot be heated to a very high temperature without loss of gas, except in a closed vessel; but this difficulty is overcome by my method of heating the liquor, because the hot water is admitted at or about the same time and practically at the same place as the liquor is introduced into the digester, and the gas which volatilizes is still contained within the digester without any loss whatever, and may be reclaimed, as hitherto, to strengthen the liquor by being discharged from the top of the digester into the receptacle wherein the cooking liquor is stored. The cooking liquor having been made of a strength exceeding that which is actually required for the digesting process is by the introduction of said hot water, not only heated, but is diluted to the exact strength which is required for the digesting process.

"I am aware that in reclaiming the sulphurous acid gases set free by the action of the heat in the digesting process, as already mentioned, some steam is blown over into the liquor with the gas, and thereby the temperature of the liquor is somewhat raised, but only slightly, however, and, indeed, it is usual to pass this gas through a cooling device for the very purpose of preventing the overheating of the liquor and the consequent liberation of the gas.

"It is a characteristic feature of my improved process that the cooking liquor is introduced into the digester at its normal temperature at or about the same time of the introduction of the digester of hot water, thereby serving two purposes, first, of quickly raising the temperature of said liquor to such a degree that the digesting process promptly begins instead of losing the time, as heretofore necessary, to raise the cooking liquor to the required temperature by heat afterward applied; and secondly, of diluting the cooking liquor from its previous excessive strength to that strength at which it is commonly used. Therefore, I do not wish to confine myself to the use of water for these purposes which has been previously heated in a separate vessel; but I may, with equally good results, use cold water with steam blown into it as it is introduced in the digester, or I may use mingled water and steam or any other method of heating the water as it is introduced into the digester, or I may use steam alone, admitting it into the digester while the cooking liquor is being admitted at or near the place where the cooking liquor is admitted to heat, and mingle with the same; the strength of the liquor, however, always being regulated to suit the conditions. Yet I prefer to heat the water in a separate vessel, as described, because it most conveniently reclaims and utilizes the steam, which in the old method is waste.

"When the liquor is heated as it is introduced, the temperature of the contents of the digester may be sufficiently high by the time the liquor is all in to avoid the necessity of blowing off much gas at the top of the digester, and, therefore, the cooking liquor may, under those circumstances, possess as great strength as it ought to have at the time the digesting process actually begins, even though it has been made of usual strength and considerably diluted in its introduction. In the so-called soda process, sulphate process, and other similar processes in this art the cooking liquor may itself be heated before it runs into the digester, or it may be heated by any of the methods above described."

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Paper Manufacture in Japan.

Alex. MacLean, Canadian Commercial Agent in Japan, writes:

A leading paper manufacturing and exporting and importing paper firm in Canada desired to have information especially with regard to colored tissue papers heretofore imported by them from Austria and other European countries. The peculiarities of Japanese paper of varied sorts strike a stranger; but in this country they have not yet reached a high degree of excellence in the production of the finer grades of paper.

The art of paper-making is still in some respects in its infancy in Japan. Yet the output of paper in 1901 (the latest report published), amounted to ten million gold dollars, and has increased considerably since that period. The yearly import of paper from abroad is about one and a half million gold dollars, thus showing that Japan is supplying nearly all its own paper. Imported papers are mostly of higher grade, which from the lack of machinery and the comparatively small native demand, cannot yet be produced here in great quantities. Before the introduction of paper machinery the industry was limited to making all sorts of papers from the bark of the "paper-mulberry" tree. The manufacture of printing paper for newspapers, writing paper of all kinds, and packing and match paper, from straw and wood pulp, is of recent date.

According to the report of the Department of Agriculture and Commerce, the value of paper made from straw and pulp in 1896 was estimated at only $1,372,000, and that of pure Japanese paper at $5,154,000. The amounts increased for the former to $3,570,000 in 1901, and for the latter to $6,325,000, thus showing the rapid growth of the industry in "European" paper in this country.

As regards the export, according to the customs returns, the values of exported paper in 1901 are $387,978, in 1902, $434,637, and in 1903, $637,082, and are also on the increase every year. Therefore it may be inferred that although the industry is in its infancy, yet it has made great strides during these three or four years past, so that not only is paper produced for home consumption, but also a large quantity of various manufactured paper articles for the foreign markets.

The pure Japanese paper, generally unbleached and rough in surface, is very strong, and is specially adapted to the requirements of the Japanese on account of its durability and softness. Tissue papers from mulberry bark for copying, "dental" and "transferring" purposes, as well as napkin papers, are now exported all over the world. Among all kinds of Japanese paper, the tissue is highly recommendable to Canadian importers for its substantial and strong quality unsurpassed of its kind. Many foreign firms have sent this paper to all parts of the world, in value about $140,929 in 1903 and Japanese firms are quite willing to submit samples to any Canadian consumers or dealers.

The manufacture of coated and toned papers, as well as of all finer kinds is yet in its crude stage. Of course, poor colored papers can be made here by mixing the color with the pulp; but to coated paper this would have to be done by hand. This would be not only expensive, but it would be according to paper authorities impossible to get an even color. So I believe that there is not much in the colored tissue paper of Japanese make at present. However, there is further information to be had about it.

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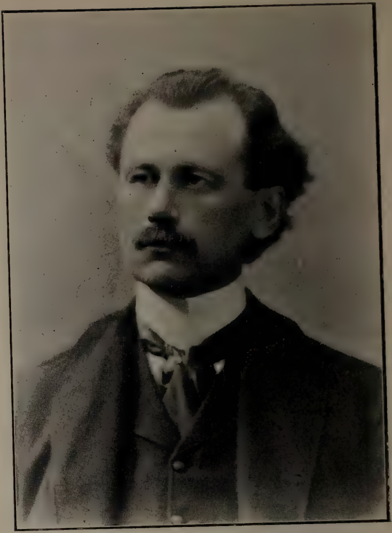
Hon. Adelard Turgeon.

Hon. Adelard Turgeon, who holds the important position of Minister of Lands, Mines and Fisheries in the new Government of the Province of Quebec, is a remarkable man alike by his talents as an orator, a writer, and an administrator. In physical appearance, he is very like Sir Wilfrid Laurier, but he resembles the latter perhaps more in the grace and distinction of his manners than in any other respect. Like Sir Wilfrid, he is calm, cool, thoughtful, and logical in all he does and never takes any course without first well weighing and knowing the results to which it will lead. Hon. Mr. Turgeon also possesses in a high degree the methodical mind which so distinguishes the Prime Minister of Canada. He is affable, courteous and unpretentious, like all men of real value, but a little shy, so that at first strangers to the man are apt to take this shyness for stiffness.

Uprightness, frankness and a keen sense of justice are the distinctive traits of his character. In fact, Mr. Turgeon is just the kind of man who would never pardon himself if he were to willingly commit an act of injustice towards any one, even towards an enemy.

Young as he still is—for he is only forty-two years old—Hon. Mr. Turgeon is nevertheless a veteran in politics and the Government of his Province. He made his debut in the political struggles of 1884, while yet only twenty-one years of age and a law student. His oratorical abilities and his commanding eloquence at once concentrated public attention upon him, and since then he has taken part in all the electoral campaigns, never withholding his generous and powerful aid from friends who needed it. In the general elections of 1890, he was returned as the representative of Bellechasse, his native county, in the Quebec Legislative Assembly, defeating Faucher de St. Maurice, one of the most brilliant literary men of the Province of Quebec, who, until then, had been regarded as invincible in that constituency. For fourteen years Mr. Turgeon has continuously represented Bellechasse, which has returned him over and over again—in 1892, 1897, 1900, 1904, and again on the 3rd April inst., by acclamation. In 1897 he was invited to accept the important portfolio of Minister of Colonization and Mines in the Provincial Government, and it was he, who, in that capacity, and in the interest of colonization, caused the first exploration to be made by Engineer Henry O'Sullivan for a line of railway between Lake St. John and James Bay. On the abolition of the Department of Colonization and Mines, he became Provincial Secretary, and, on the death of Hon. Mr. Dechène, he was given charge of the Department of Agriculture, which he administered with an ability and a success that did him infinite honor, his career as Minister of Agriculture being marked by a number of important reforms and by the powerful impetus which he gave to the dairy industry.



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Mr. Turgeon is a studious man, who likes to enquire thoroughly into things, and who does not hesitate to devote not only the day but the night to the consideration of the matters submitted for his administration and decision, while his affable and courteous manners endear him to his staff, who, if only to please him, make it a point ever to keep everything up "to the handle," so that the business of administration goes on always smoothly and expeditiously.

All who know the new Minister of Lands and Fisheries agree in saying that he will greatly simplify the working of the complicated machinery of that department, and that, with that spirit of justice and equity, which so distinguishes him, he will easily succeed in satisfying both the honest settlers and the timber limit owners.

In 1898, Hon. Mr. Turgeon was sent to Europe to represent the Province of Quebec at the inauguration of the monument erected to the memory of Champlain at Honfleurs, and delivered on that occasion a remarkable speech, which figures among the greatest feats of French-Canadian eloquence and upon which the whole leading press of France, including *Le Temps*, of Paris, bestowed the highest praise. And as a mark of its appreciation of the distinguished orator, the French Government not long afterwards conferred upon him the distinction and the decoration of an Officer of Public Instruction. He was also honored by the Belgian Government, which appointed him a member of the Order of Leopold II., in recognition of the eminent services rendered by him in the establishment and improvement of the commercial relations between that country and the Province of Quebec. Among Hon. Mr. Turgeon's more remarkable speeches may be mentioned that which he made a few years ago, before the Canadian Mining Institute, that in which he dealt so ably with the much vexed question of the exportation of pulp-wood, and that which he delivered on the important question of primary education. He has also from time to time delivered addresses before associations of students, which were veritable literary gems, not to speak of that which he pronounced at the banquet in his honor on the 20th December, 1904, and which was a real *chef d'oeuvre.*

As a public speaker, Hon. Mr. Turgeon's style is of the same chaste, elegant and lofty order, as Sir Wilfrid Laurier's, and if there be, among the French-Canadians a man who, by the distinction of his manners, talent and breadth of mind, is fitted to take, like Sir Wilfrid, a stand above his fellows, it is unquestionably the new Minister of Lands, Mines and Fisheries in the Quebec Government.

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British Columbia Pulp-wood.

In a paper before the Society of Arts, London, on the resources of Canada, C. F. Just referred to the pulp and paper industry of the Dominion. He said: "No one can fail to realize the enormous possibilities of development of the pulp and paper industry in Canada with cheap power and a supply of good labor." Clayton Beadle, chemist, in complimenting Mr. Just on his paper said: "With regard to the great papermaking industry, the resources of Canada were almost inconceivable, not only as to the available supplies of timber, but also as to the quality of it available for that purpose. It was generally believed that timber, to be suitable for the manufacture of paper, must not exceed a certain diameter. He went to British Columbia and made inquiries about the supplies of balsam, spruce, and hemlock, three timbers which undoubtedly made excellent pulp for paper. Those were very abundant on the Pacific Coast, and timbers from them had been sent to him from British Columbia between six and seven feet in circumference. Most pulp makers laughed at the idea of making pulp from such large timbers. But by means of the sulphide process, he had succeeded in producing from each of those timbers pulp equal in quality to that imported into this country from elsewhere. It was difficult to account for such large trees yielding such excellent pulp, but he thought it had something to do with the fact that on the British Columbian coast there was a stream from Japan which kept the coast open throughout the whole year, so that it was not subject to the same extremes of heat and cold as was the Eastern Coast. He thought it was not generally known that those large trees were available for the sulphide process, and it was only a few months ago that he had the opportunity of investigating the matter."

* * *

Mill Matters.

Chatham, N.B., may soon have another large paper and pulp mill. George D. Bayles, president of the Bayles Pulp and Paper Company, of Binghampton, N.Y., has secured an option on the William Richards Company's timber lands and mills and is particularly interested in one piece of 166,000 acres along the South-west Miramichi and Taxis rivers. If the company decide to locate there they will spend between $1,000,000 and $1,250,000. The headquarters of the concern will be at Chatham, or on the Intercolonial at the south of the Taxis river.

The complete list of the new officers of the Kinleith Paper Co., which recently passed into the control of W. J. Gage & Co., Limited, is as follows: W. J. Gage, president; W. P. Gundy, vice-president and managing director; A. Ramsay, secretary-treasurer; F. H. Gage, sales agent.

Thomas T. Waller, second vice-president and manager of sales of the International Paper Co., of New York, has placed his resignation in the hands of President Chisholm, who, however, has asked him to take a few days away from business to reconsider the matter.

The Inglewood Pulp Co., of New Brunswick, is asking the Legislature for an amendment of its charter. It wishes to obtain powers of expropriation for the purpose of carrying the sluice way over a piece of land which the owner will not sell. The committee thinks it cannot depart from the principle laid down last year that a private individual or company could not obtain powers of expropriation.—The bill is held over.

J. R. Booth addressed the Board of Works of the city council of Ottawa last month in support of his application to lease for ninety-nine years a property at the Chaudiere, known as Union Square. Mr. Booth said he was putting $1,500,000 in the new paper and pulp mill, across the street from the Square, and he desired to erect a steam plant on the latter site. He had occupied it ever since it was laid out and paid taxes on it, but the city had certain tax rights to it, and he did not wish to go ahead without proper authority. He proposed establishing in Ottawa an industry similar to Eddy's in Hull. It is understood Mr. Booth's request will be granted. The cost of the sulphite pulp mill is estimated at $500,000, and the paper mill $1,000,000.

Patrick Conroy, an employee of the Miramichi Pulp and Paper Company, of Chatham, N.B., was killed at the mill on the 3rd. He was scalded while opening a valve to try the water in the boilers. He leaves a widowed mother and three or four brothers and sisters. Roger Conroy, a brother, was accidentally killed last year at the Mispec pulp mill, and this fatality has called forth universal sympathy for the doubly bereaved mother and family. Conroy was about 35 years old, and was to be married at an early date. A verdict of accidental death was returned.—St. John Sun.

The Imperial Paper Mills, of Canada, Ltd., is in the London market for additional funds to increase its capacity, and with that object invites subscriptions for £60,000 six per cent. debenture stock at par, being the balance of an authorized total of £200,000. The prospectus recites that the company was formed in 1903 for the acquisition of the property of the Sturgeon Falls Pulp Company, and since then has obtained a concession for timber lands covering an area of 3,000 square miles, and has built paper mills with a capacity of fifty tons a day, capable of being increased to 120 tons daily. In addition a 12,000-h.p. hydraulic plant has been erected, and if all the power derived therefrom is not utilized by the company itself, the balance could be rented to other factories. There is an increasing demand for the products, the output being at present oversold, and orders for almost a year's production have been refused, owing to inability to cope with orders. The company estimates that a steady production of 40 to 50 tons a day should return a net profit of about £25,000 or £30,000 per annum, and should increase proportionately with a larger output.

⁂

—The Dominion is becoming a very large consumer of "news" paper. We speak of the huge consuming powers of the United States and the United Kingdom, but we are apt to forget that Canada is "getting on" in that way very rapidly as well. The new issue of the Newspaper Press Directory states that there are now published in the United Kingdom, 2,461 newspapers, of which 231 are dailies, and in Canada 1,249, of which 117 are dailies. A good total this for Canada, which in journalism, as in other things, is "getting a big boy now."—World's Paper Trade Review.

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All Work Guaranteed.

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Filling for all styles of Jordans

LAWRENCE, = = = MASS. F

TRUCKS

We manufacture Trucks of every description. Special patterns for pulp and paper mills.

Furnished with rubber tires if desired.

THE CANADIAN FAIRBANKS CO., LIMITED.
MONTREAL TORONTO VANCOUVER WINNIPEG

CHEMICAL MARKETS.

In New York china clay is quoted at $8 for domestic and $11 for imported; domestic brimstone at $20.90, prime, $21.20; high test caustic soda, $1.70 to 1.80c.; light alkali, 75 cents: dense, 80 cents, at works.

In London the following are latest quotations by mail: China clay, 19s. to £1 3s. 6d., for high grade per ton in Cornwall; common qualities, 22s. to 30s.; mineral white (Terra Alba), 25s. to 30s., according to quality; rosin sizing (Arledter's), 70 per cent. dry, £6 15s. per ton; sulphur, rolls, £6 12s. 6d., at works; recovered sulphur, £5 10s.; alkali, f.o.b., Liverpool, £4 15s.; alumina sulphate, £3 10s.; borax, crystals, £13; soda crystals, £3 2s. 6d.

PULP MARKET.

There is now plenty of water in the rivers of Canada, and eastern mills are running in most cases to full capacity. As already mentioned, most of the mills suffered during the past winter from low water, the only exceptions in Quebec being the Laurentides Pulp Co., the Belgo-Canadian mills, the Ouiatchouan Pulp Co., and Hamelin & Ayers, (the Chatham Pulp Co.), at Lachute. The average price now quoted at Canadian mills for mechanical pulp is about $13, but in the New York market Canadian ground wood is quoted at $21.

Chemical fibre is quoted in New York as follows: Domestic bleached sulphite, 2.50 to 3¼c.; unbleached, 1.85 to 2.10c.; foreign bleached sulphite, delivered, 3⅛ to 3¼c.; unbleached, 2.25 to 2.40c.; domestic soda fibre, 2¼ to 2.35c.

RAG AND PAPER STOCK MARKET.

Montreal, 17th April, 1905.

There is little change to report in the market for paper stock this month. With

ESTABLISHED 1842.

Cheney-Bigelow Wire Works

SPRINGFIELD, MASS.

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FOURDRINIER WIRES

CYLINDER MOLDS, DANDY ROLLS

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Brass, Copper and Iron Wire Cloth

SOLE MANUFACTURERS OF THE

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Bell Patent Flat Wires for Book Papers

the opening of navigation, there is always a larger collection of rags, which usually tends to lower prices. The demand from Western mills has slackened somewhat, American mills not being satisfied with the outlook for manufactured paper. Prices for European paper stock continue high and firm. Dealers there say they can sell all they collect at current prices. The future of the market is uncertain, but the probability is in favor of lower prices, especially as regards the cheaper grades of paper stock.

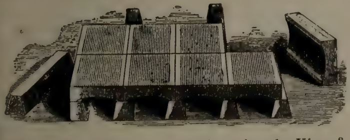
The supply of rags in this (Montreal) market is still very limited, especially mixed cottons and roofing stock. We quote as follows:

No. 1 white shirt cuttings ..	$5.25	to	$5.75
Light print cuttings	4.00	to	4.50
Unbleached cuttings	4.50	to	5.00
White shoe clips	4.00	to	4.50
Colored shoe clips	2.75	to	3.25
Domestic white cottons	2.25	to	2.50
Blues and thirds cottons..	1.40	to	1.50
Roofing stock	.60	to	.70
Waste papers	.35	to	.40
Manilla rope	2.00	to	2.12½

⁂

—The Ontario Agricultural Department is looking for a plot of land in the vicinity of Toronto, from three to five acres in extent, with a view to establishing a nursery for seedlings, chiefly pine and spruce.

Drainer Stones

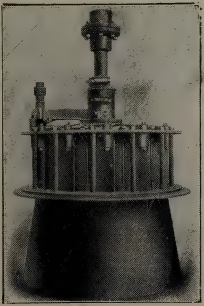


Save your stock and temper by using the Klary & Snell Patent Drainer Stones. They are the only drainers that give satisfaction.

Send for Sample and Price List.

SAMUEL SNELL CO., Holyoke, Mass.

The Samson Turbine



We have supplied many of our Samson turbine water wheels to pulp mills for direct connection to grinders, for driving beaters, and, in fact, for all power purposes.

The Samson has an even and regular speed under all changes of load, ensuring better and more even quality of pulp and an even output from the paper machines.

Of course the work placed on a water wheel when used for this purpose is very trying, but the Samson has never yet failed, under even harder conditions.

It also costs less per horse power than any other turbine.

Address Department C for Catalogue.

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THE PUSEY & JONES COMPANY

WILMINGTON, DELAWARE, U.S.A.

Machinery for Paper Mills and Pulp Mills

REPRESENTED BY

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Who are prepared to Build the Inventions
Patented by THOMAS H. SAVERY,

In Canada under Numbers 68,093, 71,746, 72,118, 77,818, 89,114 and 89,115; and also
The Guard-Board patented by J. H. GATELY, in CANADA
under Number 74,735.

DR. C. WURSTER'S Patented

Pulping Engines and Kneaders

FOR PULPING-UP

Dry Wood Pulp, Machine "Broke," Old Paper Stock, Waste Papers.

MADE IN THREE SIZES TO PULP THREE, SIX AND NINE TONS DRY WOOD PULP IN TWENTY-FOUR HOURS. — FIVE, EIGHT AND TWELVE HORSE POWER REQUIRED.

£125, £150 and £200 c.i.f. U.K. Ports.

Beaters and Edge Runners can be filled in from one to two minutes if the pulp is first disintegrated by one of the Wurster Engines, while the output is larger with the same power. These Engines do four times the work of stones, and neither shorten, affect, crease, or wet the fibre in any way, nor change the color or the sizing. They can also be used for Kneading Clay and other Fillers, and Bleaching Powder.

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MECHANICAL & CHEMICAL ENGINEER, (29) well trained draughtsman with 7 years' excellent experience on design, construction and installation of paper, sulphite—soda—sulphate and wood pulp mills in U. S. A., Germany and Sweden, and also thoroughly familiar with up-to-date sulphite—sulphate and soda pulp mfg. desires position as assist. engineer and draughtsman by Canadian Paper Mill Bldg. Company. Now employed by Paper Mills Construction Co., N. Y. References. Address "L. 29," Pulp and Paper Magazine, Toronto, Canada.

STUFF PUMP

This pump is made in three sizes, 5", 6" and 8".

The valves are made so as to be easily and cheaply replaced and can be got at without using wrench.

We also make boiler feed and other pumps.

Particulars and references on request.

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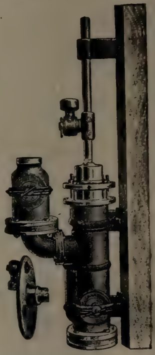

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GOVERNMENT PULP-WOOD POLICY.

It is satisfactory to hear from the lips of leaders of the new Provincial Governments of Quebec and Ontario that the conservation of pulp-wood lands and the administration of crown lands generally will be studied with more care than was bestowed upon these subjects by the late government of either province.

Premier Whitney, of Ontario, while in opposition, consistently opposed the reckless granting of timber and water-power concessions, and held that the right to cut timber on crown lands should not be conferred by treaty or special legislation, but that such rights should be sold at public auction to the highest bidder as licenses to cut pine are sold. The new government announces that its principles while in opposition will be applied now that it is in power, and moreover, that the policy of prohibiting the export of pulp-wood and logs from crown lands will be continued. Hon. Mr. Matheson, the new Minister of Crown Lands in outlining his policy the other day, said: "In discussing the estimated receipts, he said there was a probability, owing to the danger of destruction by fire, that additional timber limits along the Temiskaming Railway, chiefly in the sixty-mile track of virgin pine, would be sold, and also some limits on the Sturgeon River near the pulp lands, which were subject to a like danger. These would not be on so large a scale, or realize anything like

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PARIS	Rue de Londres No. 29.
ANGOULEME (France)	43 Rue Louis Desbrandes.
LYONS	54, Cours Gambetta.
MILAN	24 Via Solferino
TOLOSA (Spain)	18 Calle San Francisco.
NEW YORK	99 Nassau Street.
ST. PETERSBURG	Little Podjascheskaja House, 4. Qu. 16.

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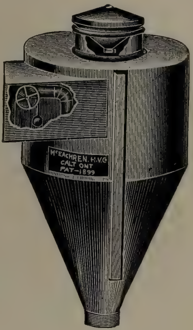
"WERTHEIMO, HAMBURG."

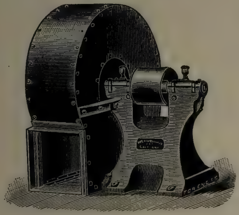
the big sale of 1903. Last year's income from pulp concession was only $10,000, a great fall from the glowing estimates made by the Liberal Government when explaining the agreements to the House.

"He concluded with a reiteration of the Government's determination to safeguard the interests of the Province."

Hon. Mr. Turgeon in an address the other day in Montreal, spoke in equally hopeful terms of an improved pulp-wood and timber policy for the Province of Quebec, and he will look into these questions in all their bearings with the purpose not only of reforming the administration of the Crown Lands Department, but of framing such a pulpwood policy as will lead to the creation of a great pulp and paper industry.

Water-power concessions granted by the late Government are receiving a good deal of attention at the hands of Mr. Whitney and his colleagues. One concession to which it is said the present





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For Coating, Bleaching or Fine Papers it is unsurpassed.

Government will take objection is that granted last November to Malcolm McLeod, of Toronto, and Joseph Sene, of Sturgeon Falls. The power is situated on Lake Nipissing.

The Toronto World puts forward a "twentieth century" crown lands policy for Ontario. It says: Never was a country so endowed with natural wealth as Ontario has been endowed in the way of forests; and we are sorry to say no national patrimony has been squandered as have been the crown lands of this province. Square mile after square mile has been wasted, has been burned over, has been stolen, and has been sold for unfair considerations. The day has come for Ontario to close the door and never again allow another foot of her timber limits to be cut by lumbermen or lumber companies, or to be exploited by timber limit adventurers. Go over the list of our millionaire families in this country, rich out of crown timber limits at their own prices. Also recall such transactions as these:—

Cap. Sullivan, Dr., To Ontario Crown Lands.

1 Timber Limit	$250
Sold to Charlton Bros.	9,000
Profit to the Cap.	8,750
Net timber taken off by Charltons.	$25,000
Profit to Charltons	$16,000

There are hundreds of worse cases than this one—only on a much bigger scale. A fresh horde of adventurers and lumbermen is ready to raid the public timber lands because the Conservatives happen to be in office. To these the door must be closed at once.

The World then suggests that no timber lands shall henceforth be sold to any individual or corporation, but that the Province itself should harvest the timber, as is done in Germany, and that education in forestry be carried out on a more extended scale than is now planned.

E. Stewart, superintendent of Dominion Government forests and forestry, gave evidence before the Agricultural Committee this month regarding the work of his branch during the year. He observed that there are 899,000,000 acres of timber land in northwestern Canada, the largest item being spruce, which was becoming very valuable for pulp. A system of fire ranging had been established for the Dominion lands similar to those in Ontario and Quebec. The co-operation of the Hudson's Bay Company had been secured, and the result had been a great benefit and protection for Dominion timber. In fact, British Columbia had decided to follow their example, and will put a system in operation this year. In view of the early construction of the Grand Trunk Pacific Railway through the timbered country of Canada, Mr. Stewart asked that an increased vote be given for the work during the next few years. Mr. Stewart gave a most satisfactory report of the progress of forestry in the North-West, the substance of which appeared in our last issue in the report of the Canadian Forestry Association.

* * *

—Many of the paper mills of the Western States are running light or closed down. Over-production is the reported cause.

* * *

At a meeting of the Scandinavian Cellulose Association, held on February 27th, it was ascertained that the larger part of the production for 1905, and considerable of the production for 1906 and 1907 is already sold. The prices for this and next year were fixed as follows: £8 10s. per ton c.i.f. London for common strong sulphite; £8 15s. per ton c.i.f. London for 1ma. light-bleached sulphite; £8 10s. per ton c.i.f. London for 1ma. strong sulphite. For several mills the production will be decreased, partly on account of the low water and partly on account of the difficulty in getting the wood out of the forests, owing to light snowfalls.

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Paper Mill Machinery.

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Modern Designs, New Patented Ideas, Used Exclusively by us.

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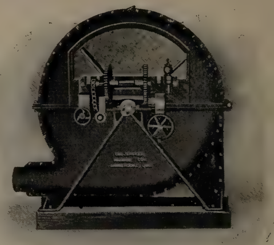

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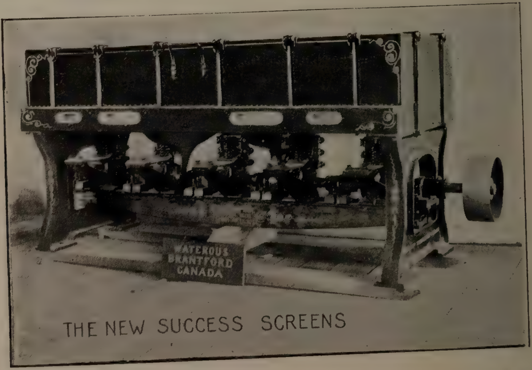

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Laurentide Paper Company,	14,000 h.p.
Montreal Cotton Company,	7,000 h.p.
Sturgeon Falls Pulp Co....	9,000 h.p.
Chicoutimi Pulp Co.........	7,500 h.p.
Price Porritt Pulp Co......	2,500 h.p.

Every Grade of Waste for
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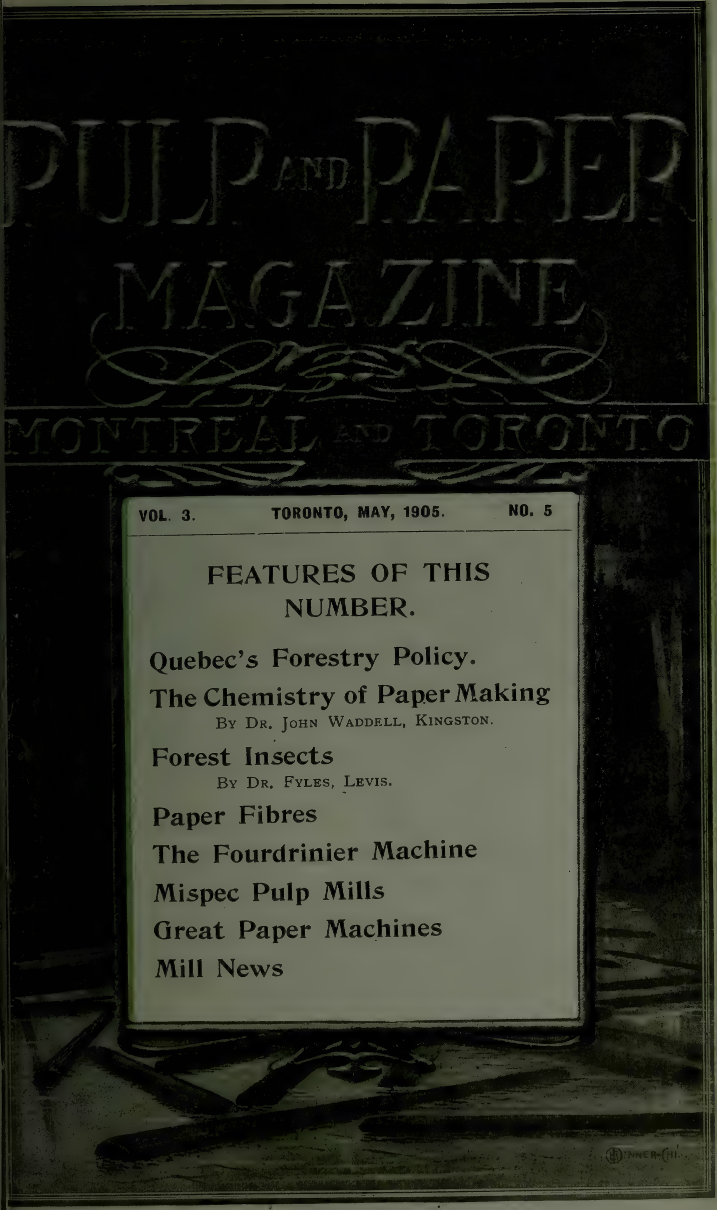

PULP AND PAPER MAGAZINE

MONTREAL AND TORONTO

VOL. 3. TORONTO, MAY, 1905. NO. 5

FEATURES OF THIS NUMBER.

Quebec's Forestry Policy.

The Chemistry of Paper Making
By Dr. John Waddell, Kingston.

Forest Insects
By Dr. Fyles, Levis.

Paper Fibres

The Fourdrinier Machine

Mispec Pulp Mills

Great Paper Machines

Mill News

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BRASS, COPPER and IRON WIRE and WIRE CLOTH of every description,
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INDEX TO ADVERTISEMENTS.

Atterbury Bros. 17
Beloit Iron Works 23
Benson & Co., W. T. 10
Bentley & Jackson 4
Bertram's, Limited 6
Black-Clawson Co., The 7
Bowater & Sons, W. V. 26
Bredt & Co., F. 10
Brunner, Mond & Co., Limited 18
Canada Paper Co. 25
Canadian Fairbanks Co., Limited, The 13
Canadian Rubber Co. of Montreal 8
Carrier, Laine & Co. 22
Castle, Gottheil & Overton 9
Cheney-Bigelow Wire Works 14
Christie, J 26
Christie, Limited, George 3
Cousland & Co., A 10
Davis & Co., F. H. 17
Eastwood Wire Mfg. Co 2
Emerson Mfg. Co 13
Freese, Jean 3
Hamilton Mfg. Co., Wm 15
Hardy, George F. 9
Hawksworth & Sons Co., Limited, Alfred. 12
Hay Knife Co., Limited, Peter 14
Hough, R. 26
Huyck & Sons, F. C 5
International Pulp Co. 9
Jenckes Machine Co., Limited 12 & 24
Johnson & Sons, Limited, C. H 6
Kenyon & Son, James 19
Klipstein & Co, A 11
Kimball, Herbert S. 9
Knight & Co., John 21
Lea & Coffiin, and H. S. Ferguson 9
Little & Walker 9
McOuat & Son, T. 18
Paton, Thomas L 3
Porritt & Sons, Joseph 10
Porritt & Sons, Limited, Samuel 26
Porritt Bror. & Austin 6
Perrin & Co., Ltd., Wm. R. 18
Pringle & Son, T. 9
Pulp & Paper Trading Co., The 14
Pusey & Jones Co 16
Quebec & Lake St. John Ry. 9
Reich & Co., O. 18
Seymour & Guest 9
Sheldon & Sheldon 21
Smith Co., S. Morgan 25
Snell, Co., Samuel 17
Sullivan & Co., C. F. 10
Union Screen Plate Co 3
Union Sulphur Co., The 19
Vogel, C. H 9
Wallace-Jaastad-Drewson 18
Wertheim & Co., A 20
Waterous Engine Works Co., Ltd 24
Whittaker, Richard 11
Wilson, Paterson & Co. 12
Winn & Holland 18
Wurster, Dr. C. 16
Young, J. S 25

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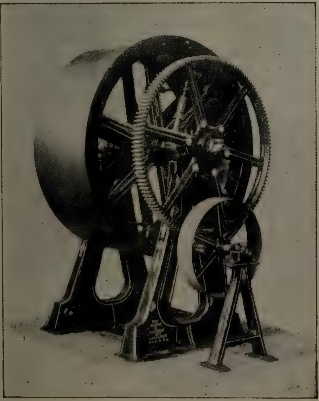

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LAKE TEMAGAMI DISTRICT.

A new world has been opened to the tourist and health seeker by the completion of the Grand Trunk branch penetrating the Temagami region, and enabling the visitor to reach in a day's travel from New York, or half a day's ride from Toronto, a country which, until a few years ago, was thought inaccessible, except to the hardy explorer or Hudson's Bay agent. A pamphlet just issued by the Grand Trunk, under the title, "Temagami," contains something more than the ordinary appeal to the summer tourist. The map of the Temagami region printed in this folder is in itself a revelation of the wonders that must await the visitor to this new wilderness park, where it is difficult to tell which are the most numerous, the lakes or the islands. Fancy a lake of 100 square miles with a shore line of nearly 3,000 miles, and with water so clear that objects can be seen at a depth of 30 or 40 feet. In this lake there are over 1,400 islands, and within a comparatively small area around the lake there are smaller lakes by the hundred. Only a few of these are, of course, indicated on the map, which, if it could contain a complete survey, would be a marvel in cartography. The wild birds, the fish, the wild animals, and the woods and flowers, embracing varieties of each that are peculiar to this region—of which 1,400,000 acres are reserved as a park by the Ontario Government—make up a round of attractions that will be irresistible to the lover of nature. It will be surprising if a year or two will not make this one of the most famous resorts on the continent. This pamphlet is not only well illustrated with typical scenery, but the descriptive sketch is really fascinating to those who appreciate the vasty wild, and is, moreover, instructive to any reader. We presume it is the result of an exploring trip made there last year by H. R. Charlton and a party on behalf of the Grand Trunk.

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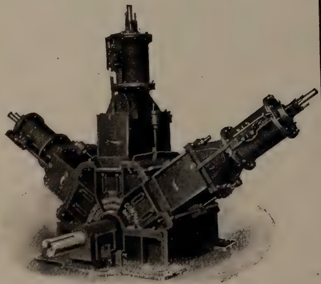

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THE
PULP AND PAPER MAGAZINE
OF CANADA

VOL. 3.—NO. 5. TORONTO, MAY, 1905. $1 A YEAR. SINGLE COPY 10C.

Pulp and Paper Magazine

A monthly magazine devoted to the interests of Canadian pulp and paper manufacturers and the paper trade issued between the 15th and 20th of each month.

SUBSCRIPTIONS: Canada, Great Britain and the United States, $1 a year; to Foreign Countries, 5s. a year.

Changes of advertisements should be in the publishers hands not later than the 10th of the month, and, where proofs are required, four days earlier. Cuts should be sent to the Toronto office, by mail, not by express.

BIGGAR-SAMUEL, LIMITED,
PUBLISHERS
18 Court St., TORONTO. Fraser Bldg., MONTREAL

As announced in the March number of the Pulp and Paper Magazine, a convention of those interested in Forestry in Canada will be held in Ottawa this summer under the auspices of the Canadian Forestry Association. From present indications this convention is likely to be of far-reaching consequence, not only to the pulp and paper interests, but to the timber, agricultural and other interests which are bound up with the forests. In the older Provinces of Canada people are beginning to realize that immense harm has already been done by unwise and reckless destruction of timber, and that the problem of re-foresting wasted timber lands is only one degree less acute than that which confronts many States of the American Union. We may hope that our public men are beginning to understand that the enormous increase in the consumption of pulp-wood brought about by the growth of the modern newspaper and book trade, and the corresponding increase in the use of paper in the realm of business will present a fresh problem touching the administration of Crown lands and the control of forests and water-powers. These problems should not be dealt with hastily, but our legislators and business men should perceive that a problem which involves at once the permanence of our water-powers and the preservation of the greatest of our national assets, the forests, is one that calls for courage and patriotism in solving. While the question is vital to the future of the pulp and paper industries, it touches, directly and indirectly, all other material interests of the Dominion, and a neglect or shirking of duty will bring a heavy national self-punishment. As the convention at Ottawa has been initiated by Sir Wilfrid Laurier, we can believe that he appreciates the greatness of the issues. What has happened in Quebec, his native Province, during the last ten years should be familiar to him, and, having a knowledge of the devastation caused in other lands by the destruction of forests, he should be able to lay down the broad lines of a policy that will keep this country from becoming a modern Mesopotamia, and that will preserve Canada's wealth for Canada's workers. Seeing the magnitude of the issues and the variety of interests affected, it is to be hoped that the best men of the country will be invited, so that the judgment of the convention may have some meaning for our administrators.

* * *

The Scandinavian paper manufacturers are awake to the advantages of technical education in their own business. At the last meeting of the Swedish Paper Mills Association a resolution was passed in favor of establishing a school for teaching paper manufacturing. One of the best investments the Canadian pulp and paper manufacturers can make is the endowment of a school of a similar kind in Montreal, Ottawa or Toronto. If this is not done, one of our universities might step in and equip a pulp and paper manufacturing branch in its applied science department.

* * *

A representative meeting of the pulp and paper manufacturers of Canada was held last January, when a resolution was passed asking the Dominion Government to prohibit the export of pulp-wood and logs from Canada. This resolution was moved by E. A. Dubuc, of the Chicoutimi Pulp Co., who promoted the memorial (quoted in the March number), designed to afford greater encouragement to the export of pulp-wood. It now transpires that the resolution has never been received by the Government, an omission of which many manufacturers will be surprised to hear. An explanation will, no doubt, be forthcoming from the gentleman entrusted with this duty.

* * *

It is very gratifying to hear, both from Mr. Gouin, the new Premier of Quebec, and from Mr. Turgeon, Minister of Crown Lands, that not only will there be a reform in the method of dealing with the timber lands of the Province, but in the plan of leasing or otherwise disposing of water-powers. There will be no more "private treaty" deals between a member of the Government and favored private individuals, but such sales or leases will be made by public auction, with proper announcements, and the powers disposed of to the highest bidder, so that the public and not personal friends will derive all the benefit of the transaction. The new Ontario Government has also set its face against giving any more concessions of timber limits and water-powers, as was done by the late Provincial Government to its discredit. Judging by Premier Whitney's utterances, he is inclined to regard the water-powers on Crown lands and in navigable rivers as essentially an asset of the State, to be administered as a trust for the benefit of the people, and not to be converted into monopolies held by private capitalists, with the object—as is too often the case—of extorting undue profits from a community placed at the mercy of such men. While many franchise holders are reasonable in their levies for profit it is not always so, but a government or a municipality, above all monopolists, is likely, from its responsibility to the people, to be fair and moderate in its methods and charges.

THE MISPEC PULP MILL.

The St. John Sun publishes the following letter to the mayor of that city from Stetson, Cutler & Co., in reply to the city's proposal to rent them the Mispec pulp mill at $5,000 a year:

"The problem before us which led us to look into the feasibility of running the mill was a very simple one. We are unfortunate enough to have located within twelve or fifteen miles of the mill enough burned timber to run the mill for ten or fifteen years. We felt that there might be a possibility we could use this timber and not allow it to go altogether to waste, and possibly by so doing, three parties might be largely benefited thereby, namely, ourselves, as we should hope to get three dollars per thousand stumpage on our logs, and if we could make that through the process of converting it into pulp, we should be perfectly satisfied.

"Secondly—It would give employment, say, to three hundred or four hundred men, in the cutting of the burned timber and transport across the bay, the manufacture into pulp, transport to the railroad, etc.

"And thirdly—It would give the city 3½ to 4 per cent. on their investment. We have not allowed ourselves to be led astray by any iridescent vision of abnormal and unrighteous profits, or the acquisition of sudden wealth beyond the dreams of avarice."

The letter continues that the location is almost wholly impracticable for a successful outcome of business, and quotes Capt. Partington as saying he doubts very much whether they would come out whole or not.

"It would be wholly out of the question to run the mill in its present condition, as the boiler plant is entirely worthless, and only by expending a large amount of money, and getting it in up-to-date condition could we hope for any continued successful outcome of manufacturing at this plant, and of course we could not consider going there and putting in an outlay large enough to put the plant in proper condition with only the short rental proposed by your honorable committee's counter proposition.

"Our propositions are so far apart that we judge it would be a waste of time for both of us to give the subject any further attention. We thank you cordially for your trouble in the matter. With assurances of respect and esteem,

"Stetson, Cutler & Co.,
"Per G. C. Cutler."

In the discussion in council which took place before the receipt of the above letter Ald. McGoldrick gave it as his opinion that the plant of the mill, valued as second-hand material, was worth $25,000 or $30,000, and said a financial man had offered $50,000 for the property. Ald. Baxter spoke of a proposal by Mr. Cushing to test the mill, and said that Stetson, Cutler & Co. had 16,000 feet of pulp-wood at hand, and could turn it into pulp in two years. Mr. Grasett was present from the pulp mill, and informed the council that there was enough wood on hand to make 16,000 tons of pulp.

The offer of the company was that they would take a lease of the mill at $3,000 a year for two years, terminable thereafter on three months' notice. If the lease should be continued, the rental would be $4,000 after two years and $5,000 a year after five years. The company also asked the privilege of purchasing the mill at any time for $50,000.

*

THE WORLD'S WIDEST PAPER MACHINE.

The widest paper machines in the world are to be built by the Pusey & Jones Company, of Wilmington, Del., for the new newspaper mill of St. Croix Paper Company, now being erected on the St. Croix river, in Maine.

A comparatively few years ago, a paper machine that was of suitable proportions to make a sheet of paper one hundred inches wide was considered large, and a continuous paper speed of 200 feet per minute was considered fast.

The machines which the Pusey & Jones Company will build for the St. Croix Company will be capable of producing a finished sheet of newspaper one hundred and fifty inches wide, and at a continuous paper speed of 550 feet per minute.

The Wilmington Star gives the following account of these machines: They will be equipped with all the special features and attachments, patents for which are owned or controlled by the company. Included among these patents are: The "Savery" patent "New Century" shaking frame, which has spring steel supports and connecting rod connections; therefore all of the bearings which support the shaking frame are positively anti-friction, and thus the necessity for lubrication is overcome. There can be no wear, and, therefore, no repairs are necessary, and no attention required of the mechanics. A patented end-thrust device for table rolls, which prevents undue endwise movement of the rolls, overcomes all unnecessary wear on the Fourdrinier wire, the table rolls, and the table roll journals and bearings; a patented brass wash trough, for cleaning the rubber deckle straps; overhung receiving dryer, for receiving the sheet of paper from the press part; a patent combined dryer steam joints and safety valves.

The fact that the company has sold 4,500 of these patented steam joints to customers in all parts of the United States, Canada, Mexico and Europe is gratifying proof of the fact that they are a very valuable attachment to the paper machine. Among other features of this machine are: automatic dryer felt tighteners; the Gately patented guard board for couch roll; clamp hub dryer spur gears; Faucett's patented friction clutches; patented two-drum winders, and numerous other valuable attachments introduced by the local company during the recent years, and which have been marked by a rapid increase in the business of this department.

Fourdrinier parts of these machines will be 166 inches wide, suitable for Fourdrinier wires 70 feet long and 164 inches or 165 inches in width; couch rolls 26 inches and 28 inches diameter, 166 inches face; three presses; thirty-two dryers for each machine, 48 inches diameter; one ten-roll stack for calenders for each machine. The paper will be wound into rolls, ready for the printing presses, on a patented two-drum winder, capable of making a finished roll of paper weighing three tons. The combined weight of the two machines will be about two millions pounds.

* * *

The contractor's plant is now on the ground for the new mills of the St. Raymond Paper Co. on the Ste. Anne river.

The Quebec and St. Maurice Industrial Company is seeking incorporation; capital, $2,000,000; for the purpose of purchasing and developing water powers, building dams at La Tuque, and elsewhere, in the Province of Quebec, and of purchasing and operating lands and timber limits; for pulp mills, paper mills, cardboard mills, saw-mills, rossing mills, carbide works, and other industries.

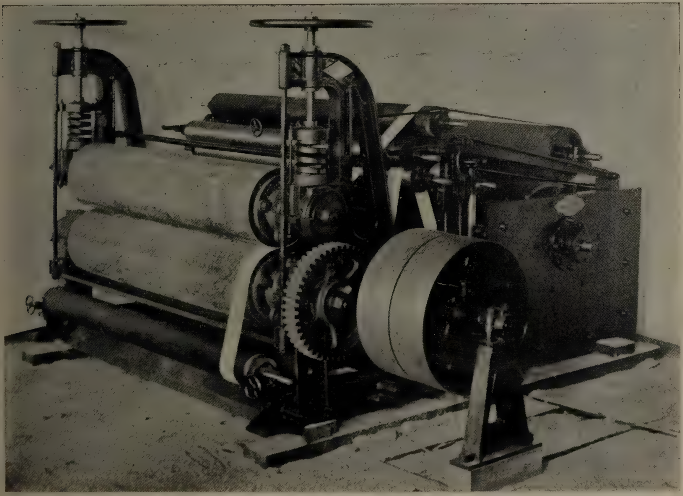
An Ontario charter has been granted to the Northern Sulphite Mills, of Canada, Limited, having headquarters at Sturgeon Falls. The capital is $500,000, and the incorporators are John Craig, of Sturgeon Falls; George Charles Lovey, Frank Ford, Britton Osler, and James Miller Ewing, of Toronto. The company may buy and sell pulp, pulp-wood, timber, and manufacture chemical or mechanical pulp, paper and all other products or by-products of wood or paper.

As recently noted, the Rolland Paper Co. is making extensive improvements to its mills at St. Jerome. A new machine is being put in having a capacity of about three tons per day; and to accommodate this and other machinery the mills will be enlarged by brick additions extending over 200 feet, four stories high. The new buildings will be completed and ready for operations by November next. The new machine will make loft-dried papers, record and ledger paper of high class.

Carrier, Laine & Co.

Among the first to appreciate the changed conditions in the Province of Quebec, and to grasp the significance of the exceptional position this Province will occupy in the future pulp and paper industry of this continent, is the long-established firm of Carrier, Laine & Co., of Levis. Having been builders of saw-mill machinery, they were called upon for certain lines of machinery required in pulp mills early in the history of the pulp business in Canada, and gradually have accumulated a stock of patterns covering the entire line of machinery necessary to equip pulp, saw and shingle mills complete.

Somewhat over a year ago, plans were made to place their shops in the front rank, and be able to turn out work on a modern manufacturing basis. With a location second to none in Canada, combining the best of facilities for shipping, either by rail or boat, they are enabled to get the best freight rates, both on the material entering into the manufacture of their goods, and on their finished product. Railroad sidings enter their yards, and shops, and ships of any draught can be loaded or unloaded at their own wharves. One of the first of their plans to be carried out was the engagement of a man of experience and training in modern shops, as general superintendent of their works. Such a man was found in C. F. MacGill, who at the time was filling the position of mechanical superintendent of the Canada Foundry Company, Toronto, and who for a period of nearly five years held the position of mechanical superintendent of the Canadian General Electric Company, at Peterboro, Ont. Mr. MacGill came to Canada in the winter of 1898-99 from the works of the General Electric Company, at Schenectady, New York, to take the position above mentioned with the Canadian General Electric Company. He received his initial training in the old Pioneer Shops, at Burlington, Vermont, one of the first



Wet machine, manufactured by Carrier, Laine & Co., Levis, Que.

shops to adopt the modern tool room system, with its checks, standard gauges and a place for every tool and fixture. And to this well laid foundation with its systematic teaching Mr. MacGill looks back with a great deal of pleasure. Early in his career, Mr. MacGill was in the employ of the Calumet and Hecla Mining Company, Calumet, Mich., becoming familiar with mining and crushing machinery of the best types.

C. F. MacGill, General Superintendent, Carrier, Laine & Co.

During his extended experience he has been connected with some of the largest concerns in the United States, and as above outlined, in Canada. Mr. MacGill became a member of the American Society of Mechanical Engineers, in 1896, and has taken a keen interest in its meetings. He is also a member of the Engineers' Club of Toronto.

Carrier, Laine & Co. have made arrangements with the Bagley & Sewall Company, of Watertown, N.Y., to build their established line of pulp grinders, wet machines, etc., and with several other well known American companies, to build water wheels and other machinery of the highest and most approved types. They are adding some of the most modern machine tools to their already well equipped shops, and are in shape to turn out machinery interchangeable in its parts, and to give the best of satisfaction to their patrons as to prices and delivery. They have recently brought out a decided improvement in automatic rossing machines and also in steam power, steam-driven gangs for saw-mills. Two of the above gangs with six shingle machines from new patterns and designs, together with twelve automatic rossing machines and a pair of 18-in. by 30-in. engines were recently turned out at their shops in filling one order.

Carrier, Laine & Co. have been very busy during the last winter, having run their works until 9.30 p.m. during a considerable part of the time. Taking into consideration the outlook for the rapid extension of the pulp industry in Canada, and the revival of the shipping interests of Quebec, the business of Carrier, Laine & Co. seems destined for a great future, keeping pace with the industrial development of the Province and the Dominion.

* * *

The Canadian Government agents in Australia, Japan, and Scandinavia are to be commended for their attention to the interests of the pulp and paper manufacturers in common with other leading industries in which Canadians are interested. Their reports, from which we have had occasion to quote, are proving useful. In one of his latest reports, D. H. Ross, the agent at Melbourne, says: It may interest Canadian paper manufacturers to know that a very determined effort is now being made by Norwegian and German makers to secure newspaper contracts throughout Australia. Small trial shipments—said to be superior in quality to any paper previously produced in Europe—are coming forward to the principal paper offices in Melbourne, etc., and if the quality is satisfactory the prices will meet present Canadian and United States competition.

Quebec Forestry Policy.

A recent issue of La Verité, Quebec, contained a noteworthy article on the province's forestry problem by Monsignor Laflamme, of Laval University. The following is a translation of a portion of the article:

The wealth of the mountainous regions of our Province is due to the forests that clothe them. Any attempt to colonize such regions would be a waste of time, energy and money, as well as a poor service to the cause of colonization. The deforestation of our mountain slopes would also seriously affect the water supply of our rivers and the industrial value of our water-powers.

To convince one's self of this fact, it is but necessary to refer to the actual condition of things existing in France, Italy, Northern Germany, and in fact in whatever quarter of the Old World deforestation has been pursued, without method or order. There the natural order of things has been so seriously interfered with, that reforestation of the denuded mountain areas, due to the rapacity of lumbermen and the shortsightedness of Governments, has to be undertaken at enormous expense.

It is our duty, therefore, to see that our forests are jealously guarded against all and every cause that might lead to their destruction, no matter under what name such cause may disguise itself They should be worked in such a way that their perpetuity may be forever assured. Unchecked exploitation of our mineral resources may be permitted, for with them renewal is impossible, but our forests, susceptible of renewal, should be husbanded with every care, and no felling but that which is rational and scientific should be permitted if we wish to preserve them as a perpetual source of wealth.

Looking at the matter from this point of view, we may well ask ourselves whether our forests receive from those who are responsible for their administration the care and protection that should be their due. Are proper means taken to prevent the destruction of our most useful forest trees? Are the felling restrictions such that we can consider the future of our forests as absolutely assured for coming generations? Are the rules and regulations of our Crown Land's Department beyond criticism? Are they based on sound principles of forestry? Should the same rules and regulations apply to all parts of the Province? Are they seriously and conscientiously put in force? These are all questions that demand clear and categorical answers, and only those who are thoroughly acquainted with the science of forestry can properly answer them.

The rational exploitation of forest lands has developed during the last half century and more, into a well established science, founded on natural laws, clear and well defined. I may here ask, whom may we consider as our scientific foresters, and where are we to look for them? If they are to be found, have they been called upon to take a part in the framing of our forestry legislation, and have they assisted towards putting it into execution?

At times one is led to think that our forestry regulations have been framed by men, who, though possessed of a measure of common sense and a certain knowledge of the question at issue, are yet absolutely unacquainted with the true science of forestry. Our Legislature, for instance, prohibits the felling of certain trees below a fixed standard and it often happens that those are precisely the trees that should be felled, so as to allow the young growth a chance of development.

One can safely assert, and without fear of contradiction, that too often, alas! our forest rangers are totally unfit for the work entrusted to them. The extent of territory under their supervision is too large and their pay is not sufficient to permit of their devoting the whole of their time and energy to the fulfilling of their duties. The position of forest ranger is often given to a man, not on account of his ability to fill it, but because he has been a valuable political friend. Favoritism of this kind cannot be attributed to any one political party, it is indulged in by both, if we are to believe those who are in a position to know.

The "Soliel," in its issue of the 23rd November last, whilst the elections were in full blast, published an article setting forth the reasons that led the Government to dispose of so many timber limits during the last few years. The reasons given were as follows: "In brief the question resolves itself to the choice between taxation or utilization of our forest resources." The article goes on to say: "To all sensible people the choice is an easy one and as a matter of fact it has been made and will not be altered," which means that the public revenue is to be increased by "drawing on the public domain." I quote the very words of the article.

Whether all "sensible people" hold the same opinion as the writer of the article I have referred to is most decidedly open to discussion. However, let us admit for a moment that the "Soleil's" mode of increasing the public revenue is the only true one, it should nevertheless have been qualified by the proviso that the public domain thus placed on the market be dealt with in such a manner that our national resources be in no way jeopardized or their perpetuity imperilled. There lies the whole question in a nutshell, and one is certainly justified in asking one's self, if, up to the present, it has received the serious and earnest consideration that it is entitled to?

The exploitation of the forest wealth of Canada is carried on not only by Canadians, but also by aliens. Canadians are, or should be, interested in working our forests in a conservative manner. Aliens, and their number is large, have as a rule but one desire, to realize a fortune as speedily as possible and then retire to their own country to enjoy their gains. From their point of view, they are not to be blamed, if they avail themselves fully of the opportunities offered them to attain their ends. Our duty, however, is clear, and the work of all those who have anything to do with our forests, whether Canadian or alien, should be carefully followed. It is all very well to foster and encourage the lumber industry, for it means the spending of large sums of money in the country and the development at the same time of our natural resources. But whilst rendering justice to the lumberman, one must, above all things, jealously guard and protect the forest and never hesitate to adopt whatever measures may be necessary to guarantee its perpetuity. I wish it understood that these remarks only apply to lands totally unfit for colonization and valuable simply as forest reserves.

A commission was named by the Government, some time ago, called a "Colonization Commission." One of its duties was to study the forestry question. The commission's report, published last year, contains a mass of interesting detail. I consider, however, that a most important suggestion might have been made by the commissioners, viz., the creation of a forestry school. Such a school would furnish us with the class of men we are so much in need of, men thoroughly conversant with the science of forestry in all its details and consequently qualified not only to make but to put in force and effect, a code o rules and regulations that would ensure the perpetuity of our forests for futur generations.

In all civilized countries such school exist, and the good they do is fully recognized. In Norway and Sweden the are marvellously well organized, and n forest work is undertaken without th guidance and advice of the heads o these schools. Here in our Province where our forests are certainly one o our principal sources of wealth, no on appears to have given the matter thought. The creation of such a schoo would cost but little and the advantages would be immense. A new caree would also be opened to our youn men, and that in itself renders the question well worthy of consideration.

Let us, therefore, do all in our powe

to secure such a school, but upon one condition; that it be absolutely free from the interference of politicians. The forestry problem is one of such vital importance, that it would be disastrous to allow the party spirit, so prevalent in politics, to interfere in the remotest manner in the management of such a school.

We trust that the question of creating a forestry school will be taken up by those better qualified to speak on the subject than I may be. We also hope that the Government will give the subject the serious consideration that it deserves. Direct taxation, the mere idea of which we all detest and dread, is sure to overtake us one of these days unless steps are taken to perpetuate indefinitely the vast resources to be derived from our forests, if wisely managed.

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The Chemistry of Papermaking.

BY JOHN WADDELL, B.A., B.SC., PH.D., PROFESSOR OF CHEMISTRY IN SCHOOL OF MINING, KINGSTON.

The manufacture of paper is largely a mechanical process. The foundation material is cellulose which is derived from various sources and is provided by nature in a state of greater or less purity. Cotton fibre is almost pure cellulose though slightly modified on the outside and having a protecting film of wax and oily matter. The fibres consist of a single cell, for the most part between one and two inches in length and about 1-2,000 inch in diameter. Linen fibre is not so pure cellulose as cotton but is stronger and has greater lustre.

In cotton and linen thread the fibres are twisted together in the direction of their length, and cloth is woven from threads which run in two directions. But in paper, the fibres should lie in all directions forming a felt, the length of fibre not being so important a matter as in thread and cloth. Hence when paper is manufactured from rags these must be torn and divided in such a way as to isolate the individual fibres. The mechanical treatment is, however, not usually sufficient. Rags are often dirty and must be cleaned. This is done to a certain extent by beating, but afterwards the rags are boiled for several hours with soda or lime. This treatment, moreover, removes size and attacks coloring matter which is thus more easily bleached. The amount of caustic soda is from five to ten per cent. of the weight of the rags, the pressure under which the boiling takes place is two or three atmospheres. Too great pressure would fix the dirt in the rags instead of removing it. For delicate fibres some manufacturers prefer lime, as being less injurious to the fibres, but a larger proportion of lime than is actually necessary to reduce the stock must be used and the excess must be washed out. Furthermore, lime is liable to contain small gritty particles which are apt to become fixed in the fibres.

Since the length of fibre is not so important in paper as in cloth, cellulose, which is not suitable for the latter, may be employed in the former, and though cotton and linen rags furnish the best paper other raw material is largely used. Before the year 1837 there was in Britain an excise duty on paper of 3d. a pound, and the demand for paper could be easily supplied by the use of rags. In that year the duty was reduced to 1½d. and the demand increased. When in 1861 the duty was abolished altogether, the demand for paper became still greater and other raw materials came into requisition, for example, straw, esparto or Spanish grass, and, most important in this country, wood pulp.

A very coarse paper may be made by simply grinding wood to a pulp, but the cellulose is mixed with intercellular tissue such as lignin and resinous matters which turn brown on exposure to light. "Mechanical pulp" is not suitable for the finer qualities of paper for which "chemical pulp" may be used. Chemical pulp is usually made by the action of soda or calcium bisulphite upon wood which has first been cut into boards, and, after being freed from knots, is broken or cut into small chips.

It may readily be imagined that many other chemicals have been used for the purpose. In most cases the action has consisted in hydrolysis or an addition of water, more or less aided by secondary reactions. In 1866 a process involving the use of water alone at a temperature of 150 deg. C. (302 deg. Fahr.), was made use of. A brown pulp is obtained containing 70 per cent. of the original wood but there is an aldehydic nature and there is a reversal of the reaction the wood being dehydrated by the high temperature. The addition of hydrochloric acid was tried for some time in Switzerland, and coarse packing paper was made, but the process was open to the same objection as with water alone. In 1852, the action of nitric acid was tried, also in 1862. Here the hydrolysis was aided by the oxidizing action of the acid and a yield of pulp of 40 per cent. was obtained. But it is difficult to get large vessels to withstand the action of the acids and nitric acid is liable to yield explosion compounds.

Caustic soda was first used in 1853 and for some years continued to be the most suitable reagent discovered. There have been many patents and many slight variations in detail but the process practically consists in boiling the wood at a temperature 150 deg. to 180 deg. C. (302 deg. to 356 deg Fahr.) the pressure being about 90 pounds. The solution contains 10 to 20 per cent. caustic soda and the boiling is continued from eight to twelve hours. In some cases there is an alternation of treatment with soda and with chlorine, the soda in the latter treatments being dilute. In the treatment with soda, the oxidation goes farther than with water or hydrochloric acid; for, instead of aldehydes, acids are produced and these uniting with soda form salts. The action is complicated as is shown by the number of bi-products.

In 1866 Tilghmann made use, though not very successfully, of sulphurous acid as a digester of wood, but obtained better results with acid sulphites. In 1882, Pictet also made use of sulphurous acid and apparently with some success. The sulphurous acid is largely recovered by being allowed to blow off from the digester into cold water where it is absorbed. As the sulphurous acid is little changed in the digester, its better action than that of hydrochloric acid is probably to be attributed to unstable compounds being formed under pressure and decomposed when the pressure is removed. About 40 per cent. of the wood is changed into a soluble modification and the brownish pulp which is left gives on bleaching a pure cellulose.

The rise of acid sulphites has an advantage over sulphurous acid alone. Calcium bisulphite is the most common reagent because usually the cheapest, but the presence of magnesia is no disadvantage, hence magnesian limestone may be used in the preparation of the bisulphite. Limestone in a tower i subjected to the combined action o water and of sulphur dioxide, the ga being introduced at the bottom of th tower and meeting a stream of wate which trickles down over the limestone. The action of the bisulphites i very similar to that of the acid, but th organic aldehyde and acids produce unite either with the sulphite itself o with its basic part. Secondary reactions by which tarry products ar formed, when the acid alone is used, ar not produced when the bisulphite is employed, probably because of the firm compounds formed by the union of b sulphite with aldehydes. The pulp ha a brownish to creamy shade, not bein so dark as when sulphurous acid i used. A larger amount of bleach however, required than one might pect from the light color, 15 to 30 p cent. of bleaching powder being r quired. The bleaching causes little lo of cellulose the amount of which obtained is nearly if not quite half of the quantity of the original wood. The formation of the aldehyde bisulphite compounds helps in the hydrolysis of the ligno-cellulose which is one of the chief constituents of wood requiring decomposition. Since the soda and the bisulphite processes are the main competitors, it is well to consider the relative advantages and disadvantages. The object aimed at is the loosening of the fibres from the encrusting material, including resin. Boiling with either soda or sulphite does this, but the resin is saponified by soda and is easily washed away. Though continued washing of the sulphite pulp with hot water, especially if containing hydrochloric acid, removes resin, the pulp darkens somewhat, and in some cases (doubtless where a special bleaching is omitted) a little bisulphite is added after the washing to improve the color. The improvement is, however, temporary, the paper is weakened, and soon becomes yellow. Digestion with soda gives a softer and more opaque pulp, but at the high temperature and great pressure necessary, partial dehydration of the wood takes place causing something similar to charring, and so producing a brown color. The cellulose itself is also attacked, and thus the fibre is weakened. The yield of pulp is considerably less, being in the case of white pine approximately 33 per cent. of the original wood, while treatment with bisulphite gives 45 to 50 per cent.

There is an economy in the soda process, in that the soda can be easily recovered, the solution being evaporated to dryness, and the residue roasted, thus forming carbonate. When heat for evaporation is easily obtainable the cost of recovery is small. The by-products of the bisulphite treatment have so far formed no industrial application notwithstanding the fact that they contain non-cellulose materials in an almost unchanged condition. Which process may be most suitable, sometimes depends upon local conditions. Sulphite prevents oxidation, a feature of the soda treatment which diminishes the effect.

In the making of paper, boiled rags, grass, straw or wood, or a mixture of these materials, is thoroughly broken up into the small fibres in a "beating engine" or "hollander," in which also the bleaching is frequently carried out, though a separate vessel, the "potcher," is sometimes used. Bleaching powder is the most common re-agent, the addition of alum to which is an advantage preserving the fibres, probably because of less violent action.

The electrolysis of magnesium chloride solution is also employed. The solution contains 5 per cent. or less of magnesium chloride. By its electrolysis hypochlorous acid is produced at the positive pole and bleaches the material. The bleaching is more rapid than with bleaching powder, causes less loss in the substance bleached for the degree of whiteness obtained and requires less available chlorine.

When the bleaching is completed the bleach must be washed out or neutralized by an "antichlor" of which sodium hyposulphite (thiosulphate) is the most common. Bleaching by chlorine in water or by hypochlorous acid, is practically a case of oxidation and the antichlor is a reducing agent.

Cellulose is the main constituent of paper, but pure cellulose forms a felt that is too open, and would allow ink to spread. Hence some substance is added to fill up the interspaces and to give the paper a firmer texture. This process is called loading. The loading material is often kaolin, but for the better qualities calcium sulphate (pearl hardening), barium sulphate and agalite (a form of magnesium silicate) are used. The loading is from 3 per cent. to 20 per cent., or in some cases even as much as 40 per cent. The loading must be in a fine state of division, and must not be allowed to settle to the bottom. Special care must be taken with barium sulphate, owing to its great specific gravity. The loading is added in the beating engine, where also some coloring matter is frequently put in. Bleaching gives a slightly yellow tint to the stuff, and to counteract this shade ultramarine is commonly employed. For making colored papers aniline dyes are largely employed, though mineral coloring matters are also used. Starch is added to pulp, so that in the later stages it may give the paper a hardness and glaze that would not otherwise be attainable.

Sometimes size is also added in the beating engine, though sometimes it is applied later to the paper when formed. The object of the size is to fill the pores even more completely than is done by the loading, and a material is chosen which has the power of resisting the action of water to at least a certain extent.

When size is added in the beating engine the material used is resin soap obtained by the action of soda on resin. Alum is afterwards added. If the sizing process is postponed till the pulp is manufactured into paper the material used is gelatine. But the chemistry of sizing is too complicated to be discussed at the end of an article. The pulp having been prepared, it must be properly strained and supplied regularly to the frames of wire gauze, on which it is deposited, and on which the fibres are felted together, whence the paper is passed between press rolls, drying cylinders and calender rolls to compact, dry and polish the paper.

This part of the process has, however, little of a chemical nature in it.

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Forest Insects.*

Rev. Thomas W. Fyles, D.C.L., F.L.S., Levis, Quebec.

Insects fall naturally under two heads: biting insects (Mandibulata), and sucking insects (Haustellata). To the former belong the borers in the tree trunks, the twig-girdlers, and the leaf-devourers; to the latter, the cicades, the scale insects, and the plant lice. It is difficult to tell which of the two orders is the more hurtful to vegetation. In "God's great army" the most insignificant corps becomes occasionally, by force of numbers, a formidable array.

In the summer of 1881 the maples presented a strange appearance. Their foliage became brown and withered, as if autumn had come before its time. On examination it was found that countless multitudes of the larvæ of a minute species of moth, Depressaria acerifoliella, had assailed the foliage. The larva of this species bites disks from the leaves, and binds them together with a silken filament, so constructing a case for itself. It protrudes its head and forelegs from its case, and moves about the leaf, eating away the fleshy parts.

In 1893 another remarkable insect attack upon the maples was witnessed. Nearly every leaf of the trees was drawn out of shape, its edges being fastened together with a fine web. Within the tent thus formed was a curious brown case, somewhat in the form of a cornucopia, and snugly ensconsed within the case was a green larva, with an amber-colored head. This, truly, was one of the most economical of insects! Longfellow has said:

> "O thou sculptor, painter, poet!
> Take this lesson to thy heart:
> That is best which lieth nearest,
> Shape from it thy work of art."

And this larva had used up its exuvia and excrementa in forming a case fo itself—an inner retreat. The leaf wa its shelter and store of food, for it fe upon the parenchyma, and left only th veins and skin. The case was its strong hold. The name of the insect is Semasi signatana.

The advent of Nematus Ericksonii is a old story now. This pest destroyed ou tamaracks in the eighties, and it "still goes marching on."

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*A paper read before the Canadian Forestry Association.

A. H. D. Ross, in his excellent article on "The Forest Resources of Labrador Peninsula," tells us that "of late years the European larch saw-fly has destroyed most of the larch between Lake St. John and Lake Mistassini, and the pest is spreading northward..

The Gipsy Moth, the Brown-tail Moth, and the Leopard Moth are new importations to the country to the south of us. So great a plague has the Gipsy Moth been in Massachusetts that the Legislature in four years (1890-94) expended $275,000 in the effort to exterminate it, and had not succeeded, and further appropriations were required. The larvæ of the Brown-tail Moth is also injurious in Massachusetts; and, as their fine, barbed hairs are easily detached and carried in the air, they often settle upon the passersby, work their way into the pores of the skin, and cause much suffering. They are greatly to be dreaded.

The larvæ of the Leopard Moth are borers. The species has found its way to New York.

In Canada a very common and mischievous pest is the Forest-tree Tent Caterpillar, Clisiocampa disstria. This also flourishes more abundantly some years than others. In 1899, it and its congener, Clisiocampa Americana, were so abundant in the counties of Drummond and Shefford that they stripped the second growth trees bare. Hordes of them crossing the railway brought the train to a standstill, the rails having become slippery with crushed larvæ.

The larva of C. disstria can readily be distinguished from that of C. Americana (the Orchard Tent Caterpillar). It has a blue head and a row of silvery spots down the back, while the other has a black head and a continuous dorsal line. I consider C. disstria the worst of the leaf-eating foes of our hardwood trees.

The larvæ of the Tussock moths, Notolophus antiqua and Notolophus leucostigma are handsome, but mischievous. They are tufted along the back as the generic name implies. Those of the latter species may be known by their red heads. Both kinds feed upon a variety of forest trees.

The males of the Tussock moths are called "vaporers," because of their jaunty flight. They skip hither and thither, as Wood says, "Like Cœlebs in search of a wife." Females, on the other hand, are most exemplary in their behaviour. St. Paul, if he had been an entomologist, would have admired them greatly. They "go not from house to house"—they stay at home and mind their own affairs. They remain upon the cocoons from which they crept. There they await their mates; there they lay their eggs, and there they die. But we must not give them too much credit for their domestic virtues. They are aided by the force of circumstances in conducting themselves well. They have only rudimentary wings.

There are a number of large moths, the larvæ of which, under peculiar circumstances, might become injurious to forest trees. Their very size makes them formidable. The larvæ of the Hawk moths, Sphinx chersis and Sphinx kalmiæ feed upon the ash, though I frequently find them on the lilac. This is not surprising, for both the lilac and the ash belong to the same family of plants, the Oleacæ, of which the olive tree is the type.

The larva of Ellema coniferarum feeds upon the pine. I wish the species were a little more common, for I have only met with one specimen in many years.

The larvæ of Ceratomia amyntor feed upon the elm. They have four prominent horns on their shoulders, and Harris on this account gave them the name of Quadricornis. There are peculiarities in the form and habits of this species that are well worth notice. It will be remembered that the leaves of the elm on the under side are strongly and regularly ribbed, and that they are often curled over on one side in a roll. The Amyntor caterpillars are of the same color as the leaf, and along the sides have seven oblique, raised, rough lines. They lie extended along the edge of the leaf, and in that position very closely resemble the roll of the leaves near them. Nor is this all. In the autumn the leaves of the elm become rusty brown in color, and that the resemblance to the leaves may be maintained, the caterpillars become of the same hue. They afford in this a remarkable instance of what is called mimetic analogy.

The larva of that stately moth, Triptogon modesta, feeds upon the poplar; and that of Cressonia juglandis upon the black walnut, the butternut and the hickory.

Upon a variety of forest trees the larva of those magnificent saturnians, Attacus cecropia (the largest of our moths) and Telea polyphemus, are to be found, whilst those of Actias luna (the most beautiful) feed upon the butternut, and those of Hyperchirea Io upon the elm, the basswood and the balsam-poplar. The last-named larvæ are set with stinging spines.

In the West the larva of that splendid moth, Eacles imperialis, feeds upon the white pine, and the larva of Citheronia regalis, which has as many horns as the beast in the Apocalypse, and is locally known as the "Hickory Horned Devil," feeds upon the black walnut, butternut, hickory, etc. I have never heard, however, that the caterpillars of these very large insects have done very much damage.

Of insects that injure the roots of the trees these are remarkable:

The White Grub.—This is the larva of the May beetle, Lachnosterna fusca. The grubs of this species are very general feeders upon the roots of plants. They are said to be injurious to young pines and tamaracks.

A formidable foe to the poplar, basswood and oak is Prionus laticollis, the Broad-necked Sawyer, which bores into the roots of trees. As it works underground its ravages are not easily detected.

But of the underground insect foes of the forest trees, the Cicadas are, I think, the worst. Happily this part of Canada is out of the range of Tibicen septendecim, which spends seventeen years at the roots of trees, imbibing at the very founts of insect life. But Cicada canicularis is very abundant with us. If you go into the woods in autumn you will hear the shrill sound produced by their little tambours or side drums, which vibrate, as the boys say, "for all they are worth." We have another species of Cicada, Tibicen rimosa, but it is not common with us.

The habits of the cicadas are interesting. The females cut grooves in the twigs of their favorite trees, and in each groove lay a row of eggs. The eggs seem to be nourished by the sap in the twigs, for they become enlarged. The newly-hatched larvæ drop to the ground, and burrow till they reach the roots of the trees. Into these they drive their beaks, and then, for three years, live by suction upon the sap. At the end of that time they work their way out of the earth, climb for a short distance up the trees, and then writhe and twist till their skins burst down the back. Out of the rent, in every case, creeps a perfect insect, drawing its legs out of their former enclosures as out of boots. In about ten minutes (I have watched the process) the air has penetrated to every part of the insect's body, its wings have been shaken out of plait into their full dimensions, and the creature is ready for flight.

If you ask me, What should be done to check the cicades? Well, I know what I should do as regards the orchard, the sugar-bush, and the enclosed woods. I should in the autumn turn a sounder of swine into them. The animals would not only eat the windfall apples, the acorns and beech-mast and fungi; they would grub about the roots of the trees and devour the immature cicads, the white grubs and the pupæ of many kinds of flies, beetles and moths. I have seen the experiment tried, and the pigs throve.

But a part of my subject of more interest to lumbermen is that relating to the "Borers"; and truly their name is legion.

A number of beetles belonging to the family Buprestidæ bore in the pine. Two splendid beetles of this family are

Chalcophora Virginiensis and Chalcophora fortis.

C. fortis is the largest and handsomest of our Buprestidæ, and, perhaps, as regards our collections, the rarest. Mr. Hague Harrington speaks of it as rare at Ottawa; and I never met with it at Montreal, nor in the Eastern Townships; but one day I was walking under the cliff at Hadlow, on the south side of the river, when I found specimens of both C. Virginiensis and C. fortis. There were no trees near in which they could have bred, and the insects were fresh and perfect. The discovery was a marvel to me till, on looking to the river side, I saw, stranded, a crib of pine timber; and then the mystery was solved. This incident shows how easily insects may be spread over the country.

There is a beetle called the Titillator (Monohammus titillator). This beetle and its congener (Monohammus marmorata) make damaging tunnels in the trunks of the pine, and they sometimes turn up unexpectedly in places far from their native forest.

One afternoon I was sitting in my study in the rectory at Cowansville, which was then a new building. Suddenly a strange object came down with a clatter upon the book I was reading. It was M. titillator. Where did you come from? I said. I looked round, and soon discovered a hole it had made in the casing of the door. What an experience that insect had gone through! It had sprung from an egg laid in a crevice of a standing pine. The tree into which it had eaten its way had been cut down, hauled through the woods, soaked in the millpond, and cut up by the circular saw. The boards had been banged about in the piling, had been kiln-dried, and then passed through the planing machine. That particular board in which was the habitation of the beetle had been worked by hand in the sash and door factory, planed and fitted, and hammered, and painted, and varnished; and, surviving all the rough usage and escaping all the deadly weapons, there lay M. titillator, snugly ensconced in his square inch of the wood, reserving himself till he could present himself as a gentleman. The larvæ of a number of these longicorn beetles are borers in various forest trees. Those of Monohammus scutellatus play sad work with the spruce. A fine spruce growing in the premises I rented some years, broke off near the ground. I found that, for about three feet upward the trunk had been bored through and through in every direction by the larvæ of this beetle.

The larva of Plagionotus speciosus is a borer in the maple. That of the fine beetle, Saperda calcarata, bores in the poplar. The apple-tree borer, Saperda candida, works also in the American mountain ash and the thorn. The larvæ of Saperda vestita, Saperda tridentata, and Cyllene pictus bore respectively in the basswood, the elm and the cedar (Thuja occidentalis).

Time would fail me to enumerate the small beetles which mine between the bark and the white wood, and which at times do much harm—volumes might be written upon them. But I must not pass over the more important of the Lepidopterous and Hymenopterous borers. Of the former we have remarkable instances: in Cossus centerensis, which bores in the poplar; in Prionoxystus robiniæ, which, as its name implies, bores in the locust, or false acacia; and in Prionoxystus Macmurtici, which A. F. Winn has found upon oaks on Mount Royal.

The larva of several species of Clearwing moths are borers: Sesia acerni, in the soft maple; Sesia pictipes, in the wild cherry; Tarsa denudata, in the ash.

The Horn-tail (Tremex columba) is a creature of formidable appearance. It has a stout acuform, but hollow, ovipositor, which extends, in its sheath, from the middle of the underside of the abdomen to a length of half an inch beyond the body. The Tremex drives this instrument through the bark and into the soft wood of the tree (which is usually a maple or a beech), and then, by muscular action, it passes its eggs through the ovipositor to the end of the wound it has made. The Tremex is, in many instances, so exhausted in the process that it has not strength to withdraw its ovipositor, and perishes at its post. As soon as the young larvæ are hatched they begin to tunnel in different directions, enlarging their passages as they grow. Other horntails of like habits to the Tremex are Sirex albicornis, Sirex flavicornis, and Paururus Cyaneus; and these assail the pine. It must not be supposed that Nature has left these borers to multiply and work their will without a check. If she had, the forests would have disappeared long ago. No; a number of formidable ichneumon flies, with yet longer ovipositors, are engaged in reducing the hosts of the enemies. Indeed, every kind of destructive insect has its foes. Insectivorous birds and predaceous insects, under ordinary circumstances, keep the spoilers within bounds. And man may give his assistance to Nature to the same end. For instance, he can preserve the woodpeckers and the soft-billed birds. The man who would shoot a woodpecker ought to be ostracized. I wish I could hear more frequently the hearty laughing call of that noble bird, the bonnetted woodpecker (Picus pileus). Alas! its beauty has been to it a "fatal gift." It has drawn the attention of the fowler.

There should be a law forbidding juveniles to carry guns. There is this to be said, these gun-bearing boys lessen their own numbers. Many a young rascal will go into the woods, and think he has done a clever thing if he has brought down a Wake-up or a Tom-tit.

When a tree is found with horntails affixed in the position I have mentioned, it may be known that that tree is doomed; it should be felled and split up for stovewood. The proper and timely burning of brush-piles will do much to lessen the numbers of insects. Brush should be burned—not when the ground is covered with dry herbage and dead leaves—but when vegetation is lush and green in June, when insect life abounds, and the fire and smoke would destroy their thousands.

In Europe in former days foresters were men of standing and importance. It seems to me that it would be a good thing if our Government would appoint, in every county in which lumbering operations are being carried on and settlements made, Government foresters, intelligent men of high character, allowing them such assistants as might be required. Their duties should be to preserve the game, destroy the wolves, regulate the burning of the debris of the lumber camps and clearings, see to the due observance of forest laws, and generally to conserve woodland interests. I think that such officers would have many important duties to perform, and that their life would be full of interest and attraction.

* * *

Paper Fibres

Wood Cell Stuff.

The researches were performed with a fresh supply of bleached soda and sulphite pulp and sulphite of aspenwood. At the start a characteristic difference in the appearance of destruction of the soda and sulphite cell stuff could not be distinguished.

During treatment in a mortar the splitting effects resemble those of the cotton fibres. The wood cell is likewise provided with a resistible covering of the inner clusters of cells, whereby the splitting capacity is diminished. Though seldom, but very distinctly, do we observe in the microscopic picture an overlapping of the outer covering of the fibres, the disposed inner layers display distinctly that their ability to split results in a smaller proportion of the spirally twisted fibre parts than observed in cotton. The fibrils are less distinctly divided, and appear to be coarser, spongy and rounded at their end parts; they have a slightly spiral but seldom an axial form. The original appearances of the sulphite fibres were entirely effaced in the beater.

In writing papers made of pure sulphite, the broken-off ends appear like pieces of decaying wood. Many cells are dissolved into flaps, but there appear many well-preserved fibre pieces, with split and sharply cut ends.

Another sample of sulphite prepared by beating during eighteen hours, showed that the greater part of the fibres had become dissolved into a slime-like gelatinous mass, appearing under 140 fold magnification like a thin cloud, which, however, under still stronger magnification would resemble a thread ball. This proves that the splitting capacity of wood goes also very far.

A noteworthy quality of the wood cells exists in their reduced capacity of resistance to the action of sharp tools under blows and concussions. In the beater the fibre proves to be more brittle than cotton and consequently it is more easily broken up into small parts. Rapid and energetic beating produces rash stuff, making brittle paper; careful and slow beating forms the before mentioned cell wall flaps, combined by slimy formations that will impart good, absolute strength to paper, although showing a tendency to make the same transparent. Accordingly the wood fibre in the present mode of treatment lacks that important middle way of fine beating or fine beaten stuff, as described in relation to the bast fibres—that means to say, shortly, the wood fibre does not assume the division into a longitudinally split mass of fibrils. It is supposable and desirable that improvements will show the way to reduce the resistance capacity of the outer walls of the wood fibres to the splitting process, and, finally, that mechanical means may be developed to perfect the fibre treatment in such a manner as to result in the perfection of a more perfect sheet, offering increased resistance to tearing and crushing, appearing opaque and white and proving the constancy of a rag fibre. But the rag fibre will claim an undeniable preference over the wood fibre until that stated treatment has been accomplished.

Straw Stuff.

The natural state of the short and pointed fibres and other plant elements presents the quality of great resistance to mechanical action and a badly bruised straw fibre is seldom observable in the paper. In boiled straw stock dissolved in the wash beater only, there are many combined groups of bast and parenchym cells, also outer skin cell groups, and well preserved vascular bundles strewn between short single fibres and cells. The short, smooth cut of the straw chopper appears very plainly. After energetic treatment in the beater and in the porcelain mortar the fibre and cell formation were showing their separation very distinctly, but the splitting of the lengthy, double pointed fibres would not succeed after stamping ever so hard over forty-five minutes.

In bleached straw stuff, partly kneaded, in the kollergang, partly crushed in the refiner, a very small number of fibres were apparent that were flattened in their centre, with parts of the cell walls cut or torn off. Unbleached straw stuff kneaded in the kollergang appeared clean and free from grit, the long fibres showing in the microscopic picture a rounded, partly slimy shape, with comparatively few parenchym and outer skin cells, but much small, crummy, partly polarized stuff. Under increased magnification these parts appear to be flattened, deformed parenchym cell tubes, crushed outer skin cells and scraped fibre points.

Refined and bleached straw stuff shows all kinds of fibres regularly arranged; the parenchym cells seem to swell considerably during the bleaching process.

According to the foregoing, we must regard the straw fibre to be devoid of the splitting quality. Regarding alfa and alfa paper, it can be said that they are almost like the straw stuff preparation.

In ground wood we notice distinctly that the sharp grain of the grinders caused a nice splitting of fibres, though the split off fibre parts are very short and rigid. In the microscopic picture, especially in ground leaf wood, this rigidness may exist on account of the sticking of incrustations to the fibres. Fine ground wood paper, consisting principally of rigid fibre parts, may possess a smooth surface and clear transparency, but it lacks the resistance to crushing. The greater number of ground wood sorts contains a number of destroyed, coarse and fine split parts; these parts do not contribute to the firmness nor transparency, while they only tend to interfere with those qualities.

Ground aspenwood fibre shows the readiness to be divided into plain fibre ends with short fringes, having split parts in their walls. Although the total libriform fibre of the aspen is finer and more flexible than the tracheæ fibre of the needle woods, yet the split off parts of the first appear to be of a coarser and more rigid nature than those of the latter. Spruce and finely ground stock show mostly much finer and more pliable fibre divisions than aspenwood; some of the latter even show fibril forms about as firm as bast fibres; however, these split divisions are so scarce, as compared with the total stock, that they are not sufficient to prevent the brittleness of the sheet. Consequently, finely and well sorted ground needle wood will produce better paper than ground aspen.

Wood flour plainly shows the great influence of the mechanical effect on the value of the product. As produced by grinding dry wood, the flour seldom contains any finely split fibres; it consists mostly of lumps and dust from destroyed fibre parts, unfit for making a sheet.

According to microscopical results paper fibres must be classified as follows:

1. Bast fibres possess the quality to split entirely and axially into the finest fibrils.

2. Cotton fibres show an imperfect and an obstructed quality to spilt into fine fibrils.

3. Wood cell stuff is also difficult to split into slightly twisted short and coarse fibrils, and these are finely soluble into slimy flakes.

4. Raw wood fibre ground wet and refined splits readily into rigid fibres, mostly in an axial direction.

5. Raw wood fibre ground dry and refined shows but a slight inclination to split.

6. Straw fibre will not split. Chemical and mechanical treatment may be made so as to produce or lessen the splitting quality, and they may, be a source of destruction.

Notwithstanding the present waste of the valuable rag stock, there will always be a sufficient supply for the finer grades of paper that are expected to preserve during centuries. The wood fibre will have to supply the great amount not requiring that durability.—Paper Trade Journal.

* * *

The Fourdrinier Machine.

Paper and Pulp, London, publishes an interesting document, relative to the development of the Fourdrinier machine a century ago. This is a verbatim copy from an old manuscript in Bryan Donkin's handwriting, loaned by his grandson, Harry Donkin, of the firm of Bryan Donkin & Clench, Limited. Bryan Donkin, founder of the firm, made the paper machine a success, and although at the time the machine was brought to his notice, he was foreman at the works of J. & G. Hall & Co., of Dartford, he quickly rose to a high position in his profession, and was finally rewarded by being elected a Fellow of the Royal Society.

The manuscript is entitled: "Evidence Given by Mr. Bryan Donkin upon his Paper Machine, Before the House of Lords, in 1807," and reads as follows:

Part of a Machine said to have been invented and used in France for the purpose of making Paper, was in the latter end of 1801 or the beginning of 1802 sent to Mr. Hall, of Dartford, by Messrs. Bloxam & Fourdrinier for the purpose of a Model to enable Mr. Hall to construct one of larger dimension by, upon the same plan. Men were accordingly employed to connect those parts of the Machine received, to supply those that were wanted, and repair others that were found defective. After spending much time and incurring a considerable expense, many attempts were made to set it to work but without success, for there was not in any of these attempts, Paper produced of such a quality as to be fit for Market.

It remained at Mr. Hall's until June, 1802—during which time no considerable improvements had been made, when I agreed with Messrs Bloxam & Fourdrinier to conduct business on their account, several improvements having been suggested many and various experiments were made to ascertain their efficacy. Without taking up too much of your Lordship's time with a circumstantial detail of every unsuccessfull attempt, it may be sufficient to say that a series of improvements were made sufficient to induce the Pattentees to set about making a working model upon a larger scale, this I think was about April 1803.

In March 1804 this working model was erected at a Mill in Hertfordshire which Messrs. Bloxam & Fourdrinier had taken for its accommodation under very disadvantageous circumstances. On our first assay with this Machine we had the pleasure of seeing many of our attempts at improvement completely successful but yet very far from being perfect, that is in such a state of perfection as to be sufficiently productive to the Manufacturer and have a decided superiority over the common process of making paper by hand, which it now passes in a very eminent degree both as it respects the strength and Texture of the paper or the quantity made. In June 1804, after three months having been spent in discovering and remedying these defects, we began a Machine of the Dimensions of those now offered to the Public. It was set to work in 1805 yet notwithstanding it had the advantage of a better conformation and some improvements resulting from experience much remained to be done, and I am clearly of oppinion (which oppinion I beleive will be corrobated by other evidence, that owing to the frequent interruptions and delays consequent upon and necessary to the introduction and attempts at improvements the proprietors derived no advantage or profit from its use untill very lately. To make a comparative estimate of the merits of the Machine in its original state with those it now possesses, requires some description of its Principle and Mechanism. The Principle consists in the placing a Sheet of Wove wire made endless by joining its ends together upon two paralel Rollers in such a possition as to keep the wire extended in an Horizontal possition and giving it a progressive motion whilst the pulp is suffered to fall upon it in an uniform stream near that end from which the upper part of the wire moves, so that by continuing this process the upper surface of the wire will be covered with Pulp.

Near that end to which the motion of the wire is directed are placed two Cylinders pressing upon each other and including between them the upper part of the wire upon which the Paper is formed.

By turning these Cylinders in a proper direction, the motion above described is communicated to the wire and in passing between them the pulp or paper receives a slight pressure, thereby forcing out a considerable quantity of water and rendering the sheet of such a consistency as to bear being removed from the surface of the wire.

State of the Machine when brought from France.	**Machine in its present Improved State.**
1st. In the Machine brought from France the means used for delivering the pulp upon the wire were such as precluded the possibility of making paper of an uniform thickness.	1st. The quantity of Pulp can be so regulated as to preserve great uniformity of Substance.
2nd. The width of the wire determined the width of the Paper, subjecting the Manufacturer to the expence and incon-	2nd. The width of the sheet can now be increased or diminished with great facility by a moveable apparatus, the re-

venience of having as many wires and Cylinders of a corresponding length as the various widths of the Paper required.	sult of a great number of expensive Experiments. It enables the Manufacturer to make any width at pleasure, upon the same wire up to 54 Inches, the greatest width being determined by the Dimensions of the Machines at present which might, however, be increased *ad libetum.*
3rd. The shaking motion was communicated to the wire in a very irregular way so that the paper was never properly closed or shut. [*See note at end.*]	3rd. The machinery for communicating the shaking Motion to the wire is so contrived that the number and length of the vibrations can be adjusted with ease to suit the nature of the Pulp.
4th. The imperfect manner by which the wire was extended latterally was attended with danger to the wire itself, being often torn in pieces.	4th. The wire is conducted in a proper direction and stretched latterally or sideways by means of Friction wheels which relieve it from a great deal of friction and unnecessary Tension and by which the durability of the wire is much encreased.
5th. The edges of the paper were very imperfectly formed so as frequently to occasion its adhering to the upper Cylinders and to be torn.	5th. The edges of the paper are now made very clean and perfect by the apparatus mentioned in 2nd.
6th. No effectuall means were used to prevent the Pulp from running back towards the end from which the wire moves.	6th. The pulp is suffered to fall upon a piece of Oiled Silk stretched across the Machine which acts like a valve and effectually prevents its running back.
7th. An endless felt was introduced between the upper Cylinder of the two above described and the surface of the paper, to which a great deal of the pulp attached itself and rendered it necessary to have it changed and washed every half-hour less or more according to the quality of the Paper.	7th. Instead of the endless felting passing between the first pair of Cylinders upon the upper surface of the paper, an endless sheet of Wove Wire was introduced and has proved a very valuable acquisition to the Machine as prior to its adoption the greatest quantity of paper produced was 20 feet per minute under the most favorable circumstances, but with the wire it has frequently gone at the rate of 34 feet per minute. It never requires changing untill worn out and lasts about 3 months.
8th. The paper was removed by hand from the surface of the wire after passing between the Cylinders and deposited upon a sheet of endless Felting or flannel and upon that made to pass between a second pair of Cylinders to receive a harder pressure, the uncertain manner in which the sheets were divided and the wet state of the paper occasioned much of it to be torn and otherwise injured.	8th. To remove these difficultyes it was necessary that the first machine with the wire and Cylinders should be so connected with the second or Pressing Cylinders that the Paper might by the action of the Machine itself pass from the wire to the felt, without the assistance of Manual Labour, to this end it was absolutely necessary that the motion or velocity of the two pair of Cylinders should be exactly alike, for should the Pressing Cylinders move faster than those of the first Machine the Paper would be torn, and if slower it would be suffered to return upon the underside of the wire, and spoiled.

9th. No effectuall means of cutting the Paper into sheets were provided.

10th. The process was then performed by two distinct machines and by two opperations. The first consisted of the Vat, Wire and Cylinders, the second of a Felt and Cylinders which we generally call the Press, as in passing between these Cylinders the Paper receives a very hard pressure. In removing the Paper from the first Machine to the Press it was liable to much injury from its being too wet to bear handling.

11th. When the paper was made or rather intended to be made in long sheets to be sub-divided after passing between the second press, Rollers were placed at the end of the machine upon which the paper was collected but in such a way as to render it ineffectual and to spoil the paper.

12th. See the 7th for Velocity resulting from the present various improvements.

There not only existed the great difficulty of making two pairs of Cylinders with that degree of Mathematical Truth required and determining their relative motion with equal precision, but the paper and feltings being elastic bodies their velocity became affected by the different degrees of compression given to the Cylinders, it was therefore necessary to introduce some adjustable mode of communicating the motion from the one to the other which after many experiments and at last a very expensive apparatus (viz., An Expanding Wheel capable of being regulated by a screw when at work) was affected.

9th. The Paper being received from the Machine in very long sheets is sub-divided by a Manuel process with great ease and exactness.

10th. See 8th.

11th. The paper is now received upon a Reel placed at the end of the machine which being drove with a proper velocity rolls up the paper.

12th. The operation of these machines from their numerous defects was extremely slow, so much so as to render the Invention entirely useless.

Messrs. Fourdrinier's Expences in Making and Perfecting the Paper Machine up to 1807.

Expenditure for Improvements and Experiments.

				£	s.	d.
Improvements and experiments upon the Original Model from June 1802 to April 1803 exclusive of Mr. Hall's Bill				1,327	10	0
Frogmoor Machine from April 1803 to April 1804				1,555	7	0
Frogmoor Mill and Machine from April 1804 to June 1807				2,395	15	0
Two Waters Machine	£4,203	17	10			
Value of the Machine, etc.	1,450	0	0			
				2,753	17	10
Expences on Alterations and Improvements				—		
				8,032	9	10
				2,600	0	0
				£10,632	9	10
St. Neots Machine	£2,745	0	0			
— Machine, etc.	1,450	0	0			
				1,295	0	0
Total Expenditure				£11,927	9	10

	£	s.	d.
On the Original Model	1,327	10	0
On the Working Model at Frogmoor to April 1804..	1,555	7	0
Frogmoor Mill & Machine from April 1804 to June 1807	2,395	15	0
Two Waters Mill and Dryinghouse	2,726	8	7
Two Waters Machine	4,203	17	10
St. Neots Mill	11,276	15	4
St. Neots Machine	2,745	2	7
	2,600	..	..
	28,830	16	4
Bermondsey	3,000	..	..
	31,830	16	4

Note to No. 3.

In the manufacture of paper this is the most delicate and difficult part of the operation, as the beauty and strength of paper depends so upon the proper application of a quick vibratory motion given to the mould or wire upon which the Paper is made whilst the pulp is in a liquid state, it causes a greater or less number of the minute fibres of the flax to be laid in an horizontal position and to be more regularly distributed over the surface of the wire forming with each other as the water leaves them a kind of casual intersection, and this intersection, consequent strength and beauty of the Paper will be more perfect as a greater or less number of the fibres are laid horizontally or parallel with the sheet of paper when made.

* * *

Canadian Rubber Company.

The growth of the rubber industry in Canada up to a score of years ago, was of a very slow nature, but during more recent years the great demand for rubber goods of all kinds has impelled an extension of the manufacturing facilities in this as in many other industries.

Over fifty years ago, The Canadian Rubber Company, of Montreal, commenced operations on the banks of the St. Lawrence river, Montreal, each year increasing gradually the size of their plant and the variety of their product. At the present time the factories of this company, at Montreal, cover over 12 acres of space, and it is great evidence of the vast strides the Dominion is making in this industry, as in others, when it is mentioned that even this enormous space for manufacturing purposes is found at the present time entirely insufficient.

For years The Canadian Rubber Company have been leaders and originators in many of the progressive manufacturing and distributing methods that have made Montreal famous as a commercial centre, and they have always aimed not to only keep up with the rapid growth of the Dominion, but also to anticipate the great expansion of the future.

It may be mentioned that during the year 1904, over $240,000 was spent by the management on additions and improvements to the factories. The statement is now given out by D. Lorne McGibbon, general manager of the company, that during the year 1905, no less a sum than $250,000 has been allocated by the directors for the purpose of not only improving the present plant in the way of additional machinery, etc., but in the erection of new factories for the manufacture of many lines of goods at present being handled in a restricted way—but for which there is a great possibility in this country. It is anticipated by the management that the new factory and additions to the existing plant will increase the present producing capacity by at least 50 per cent. The completion of these additions and improvements will make it possible to employ a very large additional force of work people in the Montreal factories, and all concerned in the progress of the Dominion will be interested to know of this great projected expansion of the manufacturing facilities of The Canadian Rubber Company of Montreal.

NEW BENTLEY & JACKSON MACHINE.

Not long ago Bentley & Jackson, Bury, England, sent a splendid machine to Canada, and now they have completed one for the Wargöns Aktiebolag, Sweden. This machine is intended for the production of "news" and printings, and will make a finished sheet of paper 110 inches wide on a wire 60 feet long.

The wire frame of the machine consists of two steel side bars, covered with copper— electrically deposited— which support the breast roll, table rolls, and the wire stretching rolls; these are carried by Smith's Patent Vibrating Frame, with oscillating links and hardened steel bearings, with Seddon's Patent Regulator for varying the amount of shake any degree whilst the machine is running. The table roll bearings are carried on a new design of pillar bearings, with oil catchers and a simple and sensitive adjustment.

The vacuum boxes are five in number, depended from two electro-coppered steel rails, arranged so that each box may be readily taken out. The dandy arrangement will take dandies from 4 inches to 10 inches diameter, and has adjustment for the dandy roll, both vertically and horizontally. At this point, a spray-cutting apparatus is applied for facilitating the feeding of the wet pulp from the couch rolls, to the first press felt. The bearings which carry the guide roll are first fitted with a mechanism for automatically keeping the wire in the centre of the machine. The guide rest and stretch rolls are made from bored and turned cast brass shells, of ample thickness to ensure perfect rigidity. The couch rolls are 20 inches and 24 inches in diameter, made of iron centres, with electrically deposited copper jackets, carried in radial arms of cast steel, with levers and weights for adding or relieving pressure, and the water supply for the top roll is provided by brass tubes perforated with holes. A Dobson's Patent Roller Doctor is applied to the top roll.

The first and second presses each consist of a pair of rubber and chilled-iron rolls, each 20 inches diameter—the bottom roll carried in gunmetal fixed bearings, the top roll in cast-iron lever bearings, with gunmetal steps, with a lifting arrangement of square-threaded screw, worm and worm wheel, and large hand wheels. The third press arrangement consists of a pair of brass shells mounted on cast-iron centres, 20 inches diameter, bottom roll carried in fixed bearings, the top roll in cast-iron lever bearings with gunmetal steps, with lifting arrangements similar to the first and second presses described. All the press bearings are self-oiling. The felt arrangement is so arranged as to take the felts from the previous presses, each felt being about 45 feet long. The wet felt rolls are of steel tubes with copper jackets, and are carried in cast-iron carriages with gunmetal steps, and fitted with suitable arrangements for guiding and stretching the wet felts. Rubber and brass squeezer rolls with the necessary driving arrangements. The paper leading rolls are of brass, with self-oiling ball bearings. The drying part consists of one paper leading cylinder 30 inches diameter, and twenty-six cast-iron drying cylinders, each 4 feet diameter, made from carefully selected and double refined metal; each cylinder is bored through and highly polished on the surface, being ground when rotating on its own bearings. The cylinders are carried by massive cast-iron framing of a new design, so arranged that each part is easy of access to the machine tender when feeding the paper through, or when changing the felts. Each pair of frames carrying a cylinder is fitted with self-lubricating pedestals. All steam connections for heating purposes are fixed at the back of the machine. The cylinders are arranged and driven in two sections and are clothed with four felts with felt-drying cylinders. Each paper-drying cylinder is fitted with a solid self-weighting doctor, with travelling gear actuated from the back of the machine. The dry felt rolls are of steel and carried in cast-iron carriages with gunmetal bearings, with efficient and ample stretching arrangements and automatic dry fixings for guiding the dry felts.

One nine-roll finishing calender is provided for putting the necessary finish on the paper. From the calender the paper passes through the slitting apparatus, and then to the revolving brush damper, after which it is reeled and ready for the printing machine. The adjusting hand wheels on the friction pulley driving the reeling apparatus are arranged to remain stationary when the pulleys are revolving. The variable driving gear for the paper-making machine consists of large cone pulleys (each pulley mounted on a patent friction clutch, which is actuated from the front side of the machine), with strap guides, each section of the machine being driven from a corresponding pulley carried with countershafts, the power being taken from an inverted steam engine with rope driving to the countershafts above mentioned.

At the coucher and presses a disengaging clutch is fixed on the end of the roll, and a corresponding clutch on the end of the shaft. This is to be used when changing the wire and felts.—Paper Maker.

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LITERARY NOTES.

"Chapters on Paper-making," by Clayton Beadle, of London, Eng., a chemical expert in paper-making, are made up into book form from a series of lectures delivered at the Battersea Polytechnic Institute three years ago. This, the first volume of 150 pages, comprises ten lectures, dealing chiefly with the nature of the fibres from which paper is made, bleaching, the influence of moisture on paper, the function of water in the formation of a web of paper, the durability of paper, the physical qualities of paper, and art papers for process printing. This volume, which is published by H. H. Grattan, 17 Borough, London Bridge, at 5s. net, is to be followed by another, now in preparation, on the "Theory and Practice of Beating." The present volume contains much information, not only on processes of manufacture, but concerning the character of paper made from different raw materials. The author's remarks on the problem of producing papers to stand the ravages of time are worth study.

The 1905 edition of the "Directory of Paper Makers of Great Britain" has been issued in paper boards by Marchant, Singer & Co., 47 St. Mary Axe, London, at 1s. 6d., post paid. It gives the name and location of each paper mill, the number of machines and kind of papers made, name and address of selling agent, etc., a list of the mills by counties, a classified list showing the mills engaged on each line of paper, a list of trade marks and water marks in papers and stationery.

The Quebec and Lake St. John Railway Co. has issued from its head office in Quebec some new and attractive literature, which shows the remarkable progress of the Lake St. John region, not only in pulp and lumber manufacturing—described last year in this magazine—but in farming and stock-raising. The attractions of this country for the tourist are already known, and the half-tone pictures of the scenery of Lake St. John, the Saguenay, and the country to the north of the lake, which appear in the three pamphlets before us, will confirm all that has been said by visitors.

The annual report of the Board of Trade of Ottawa for the past year has been issued. In the address of the president, Denis Murphy, special reference is made to the pulp-wood, pulp and paper questions. As will have been seen by the extracts from his speech, quoted in our March number, Mr. Murphy has a strong conviction that the present pulp-wood policy of our Government does not make for the best development of pulp and paper manufacturing in Canada.

Charles E. Perry & Co., of Boston, paper cutters and manufacturers of roll papers, is a firm which not only has a taste for art, but carries its art with true skill into the field of advertising. Mr. Perry has sent us four pictures, made by the photogravure process. These pictures would sell at the art dealers for $1 to $2 each, but the only hint of advertising is the name of the firm in modest type in a lower corner of the sheet, in such a position that it can be covered up when framing the picture. This shows a refined sense of the fitness of things, which is not always in evidence in the advertising matter got out by United States firms.

Mill Matters.

The Dominion Act of Parliament by which the Gillies Bros., Limited, of Carleton Place, is authorized to increase its capital from $500,000 to $1,000,000, also gives the company power to erect and operate pulp and paper mills.

The Legislature of Newfoundland has confirmed the contract granting the Harmsworths, the English publishers, the pulp concession on 2,000 square miles of the interior of the island for the establishment of pulp mills. The Harmsworths paid $500,000 for the property, and undertake to expend $1,000,000 in sixteen years.

Hon. J. J. Foy, Commissioner of Crown Lands of Ontario, has received a deputation representing a Montreal firm, which proposes to erect a large factory at Haileybury for the manufacture of wooden and pulp articles. The concern is to employ 500 to 600 hands, and expend $500,000, of which $200,000 will be the cost of the machinery.

The Sault Ste. Marie Pulp and Paper Company commenced this month the manufacture of tarred building paper. The new plant, which is the only tarred plant in Ontario, has a capacity of twenty tons daily, and will be kept running steadily, day and night. The product will be shipped to the North-West. A. E. Milligan, superintendent of the pulp mills, is the designer and builder of the plant.

It is announced that Spicer Bros., paper manufacturers and dealers, of London, have undertaken the selling agency of the Western Canada Pulp Paper Company, of British Columbia, whose prospectus, as mentioned in last issue, was recently issued in London. It is stated that a contract already has been entered into for the sale of the greater part of the output for the next five years.

PERSONAL.

Senator J. D. Rolland, of the Rolland Paper Co., Montreal and St. Jerome, is going to England and France in connection with the excursion of the Canadian Manufacturers' Association this summer. Senator Rolland is on the committee having the direction of the itinerary. A trip will be made to France during the excursion.

R. S. Lea, Freeman C. Coffin and H. S. Ferguson, civil engineers, have formed a partnership under the style of Lea & Coffin and H. S. Ferguson, as consulting engineers, making a specialty of pulp and paper mills and power developments. The offices of the new firm are in the Coristine Building, Montreal. Mr. Lea, the resident member of the firm, is well known in connection with McGill University, being an honor graduate of that university, and having been for several years assistant professor of civil engineering, during which time he contributed valuable papers to the Canadian Society of Civil Engineers, dealing with sanitary subjects and the question of the flow of streams in relation to water power and water supply. Mr. Coffin has had extended experience as engineer of waterworks and sewage disposal systems, having been employed as consulting engineer or engineer in charge of works in over eighty places in the United States and Canada. He is the author of a work on hydraulics and of several papers on the construction and maintenance of water-works, sewage systems, etc. He has also been frequently called in as an expert in the valuation of such works. He is a member of the American Society of Civil Engineers, as well as of the Canadian Society of Civil Engineers, and of other technical societies. Mr. Ferguson is chief consulting engineer of the Great Northern Paper Co., one of the large paper and pulp mill corporations of the United States, several of whose largest pulp and paper mills he has designed. Among these is the plant at Millinocket, Maine, one of the largest of its kind in the world. He is also a member of the Canadian and American societies of civil engineers and of the American Society of Mechanical Engineers.

NEW INCORPORATIONS.

The Rolland Paper Co. has obtained an amendment to its charter, enabling the company to arrange with the municipalities in which its works are situated for exemption of taxation for twenty-five years; and to enable it to issue bonds and preferential stock; also to transmit electric power to its mills, under the direction of the municipal authorities.

The Turner Lumber and Pulp-wood Co., capital $100,000, has been granted a Quebec charter to manufacture pulp and paper, and to deal in pulp-wood, lumber, spool-wood, to develop water-powers, operate mills, steamboats, railways, etc. The incorporators are: Richard Turner, merchant; Richard Ernest William Turner, lieutenant-colonel; Archibald Miller, manager; Albert James Turner, book-keeper, and William Clifton Bickell, book-keeper, all of the city of Quebec.

The A. A. Langford Co., London, Ont. capital $40,000; A. A. Langford, A, G. Langford, J. A. Moir, and B. Langford, all of London. To manufacture books, stationery, book machinery, materials, etc., and to carry on the business of printer, embosser, lithographer, etc.

The Colonial Lumber Co., Ottawa, has received a Dominion charter, capital $100,000; E. J. Chamberlain, J. W. Smith, C. J. R. Bethune, N. G. Larmonth, Ottawa, and R. W. Gordon, Pembroke. To carry on the business of lumbering in all its branches, to manufacture furniture, doors, etc., to construct pulp and paper mills.

A bill has been passed by the Quebec Legislature authorizing the Chicoutimi Pulp Co. to issue mortgage debentures to an amount not to exceed $80,000, or to increase its capital by issuing privileged or ordinary shares not to exceed $400,000.

⁂

—Edward Trout, of Toronto, has returned from his winter's sojourn in Florida. Mr. Trout was one of the original promoters of the Toronto Paper Mfg. Co., of which he is still secretary-treasurer. Finding everything in good shape at the mill, he contemplates a trip to Great Britain and the Continent during the coming summer.

—The annual meeting of the Toronto Paper Mfg. Co. was held this month in Toronto, when the following were elected officers for the ensuing year: President, John R. Barber; vice-president, Charles Riordon; secretary-treasurer, Edward Trout. The other directors are: Richard Brown, Rev. Wm. Briggs, J. R. Douglas, John G. Riordon, John Waldie, all of Toronto. Some improvements have been made to the plant during the past year, which has been a very prosperous one. The usual dividend was declared.

—Charles H. Vogel, hydraulic engineer, Ottawa, has been to British Columbia to report upon a pulp and paper mill proposition there. The company is organized, but as yet Mr. Vogel does not care to reveal the principals. The company has $50,000 acres heavily timbered with spruce, balsam, and hemlock, and much of it has four times as much timber per acre as on the average Eastern pulp concession. The company will first erect a sulphite mill, then ground wood, pulp and paper mills. The company's water power, on the shore of a natural harbor, will develop over 25,000-h.p. Mr. Vogel tells of spruce logs in British Columbia 7 ft. in diameter.

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Fairbanks Valves so largely used in pulp and paper mills throughout Canada? Because fuel economy is such an important factor in this business that only the very best valves can be used.

FAIRBANKS VALVES

are built on honor. There is nothing cheap or skimpy about them. They are heavy and strong. The Renewable Disc feature places them in a class by themselves. There are no nuts, bolts or pins used in our valves. No other valves are

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in paper and pulp mills in Canada, and the reason for this is the complete satisfaction Fairbanks Valves are giving to users.

THERE'S A REASON!

THE CANADIAN FAIRBANKS Co., Limited,

MONTREAL. TORONTO. VANCOUVER. WINNIPEG.

CHEMICAL MARKETS.

In the London market loose lump alum is quoted at £5 5s., and ground alum, in bags, £5 15s.; sulphate of alumina, £4 10s.; bleaching powder, 35 per cent., £4 10s.; caustic soda, £3 5s. for common, and £6 5s. for refined; soda crystals, in bags, £3; sulphur, recovered, £4 15s.; roll brimstone, £6 15s. Sicilian, £5; China clay, in bulk, f.o.b., Cornwall, 11s. to £1 10s.; in casks, 9s. 6d. extra; in bags, 4s. extra.

In New York prices are as follows: Alum, $1.75 to $1.80, for lump, and 5c. extra for ground; China clay, $8 and up for domestic, and $11 and up for imported; alkali, 75c. for light domestic in bulk, and 80c. for dense; caustic soda, domestic high test for delivery over this

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DEALERS IN
Paper and Pulp of All Kinds.
Prices and Samples on Application.

BARKER,
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—ALSO—
Brass, Copper and Iron Wire Cloth
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SOLE MANUFACTURERS OF THE
Bell Patent Flat Wires for Book Papers

ınd next year, $1.75 to $1.85; bleaching oowder, contracts, $1.25; in second hands, $1.40; brimstone, prime, domestic, $21; seconds, 30c. less.

* * *

RAG AND PAPER STOCK MARKET.

Montreal, May 20, 1905.

The increased collections of rags usual n spring has not resulted in any maerial change in prices. Collections this ear have been unusually small. Paper nakers have been holding back their rders, looking for lower prices. Euroean stock is held firmly at higher rices than domestic, and the probailities are in favor of prices here adancing. There is an active demand for oofing stock. There is also a good nquiry for blues and thirds. The deıand for waste paper stock is not so ood, and prices on the better grades re a little lower.

o. 1 white shirt cuttings	$5.25	to	$5.75
ight print cuttings	4.00	to	4.50
nbleached cuttings	4.50	to	5.00
Vhite shoe clips	4.00	to	4.50
olored shoe clips	2.75	to	3.25
omestic white cottons..	2.25	to	2.50
lues and thirds cottons.	1.40	to	1.50
oofing stock	.60	to	.70
Vaste papers	.35	to	.40
anilla rope	2.00	to	2.12½

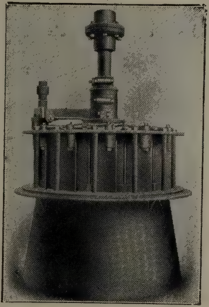
* * *

SCANDINAVIAN MARKETS.

The "Farmand," of April 15th, reorts on the British market from the candinavian point of view:

Having this week had an opportunity f seeing several letters from leading Lonon pulp agents, in which they relate, for e benefit of their principals, what their r. So and So, of their firm, has had to y about plenty of cheap offers from ighbors, we beg most distinctly to asrt for the benefit of our countrymen at we know the situation of the maanical pulp market to be as strong as it ssibly can be. British papermakers ve this week in vain tried to buy for

The
Samson
Turbine



We have supplied many of our Samson turbine water wheels to pulp mills for direct connection to grinders, for driving beaters, and, in fact, for all power purposes.

The Samson has an even and regular speed under all changes of load, ensuring better and more even quality of pulp and an even output from the paper machines.

Of course the work placed on a water wheel when used for this purpose is very trying, but the Samson has never yet failed, under even harder conditions.

It also costs less per horse power than any other turbine.

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Wm. Hamilton Mfg. Co.
PETERBOROUGH, ONT.

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WILMINGTON, DELAWARE, U.S.A.

Machinery for Paper Mills and Pulp Mills

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THE WM. HAMILTON MFG. CO., LTD.,

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Who are prepared to Build in Canada the Inventions
Patented in Canada by THOMAS H. SAVERY,

Under Numbers 68,093, 71,746, 72,118, 77,818, 89,114, 89,115;

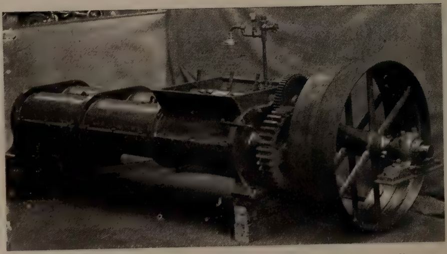
J. H. GATELY'S Guard-Board Canadian Patent 74,735,

Ejector Vacuum Pumps — Bertrams Limited — Patent.

DR. C. WURSTER'S Patented

Pulping Engines and Kneaders

For PULPING UP MACHINE "BROKE," OLD PAPER STOCK, WASTE PAPERS, DRY WOOD PULP, &c.



Three Segment Pulping Engine—Trough 800 and 2,000 lbs.

Nearly 150 at Work. 3

These Machines, with the same power, do from TWO to FOUR TIMES the WORK of STONES, without Shortening, Affecting, Creasing, or Wetting the Fibre in any way, or Changing the Colour or the Sizing.

Beaters not required in making Boards from Old Paper Stock.

Can be used for Kneading Clay and other fillers, as well as for Kneading Dry Bleaching Powders, instead of the Bleaching Mill.

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ENGLAND. 3

prompt delivery below the rates reported last week, but on receiving counter offers for shipment in June, they have insisted on delivery not later than first half of May. This shows plainly that they are now approaching the day when the last of their winter stocks will be finished. Of the quantity of pulp which Norway and Sweden can this year be expected to produce, there is at this moment less than 80,000 tons unsold; the price now demanded by makers, viz., between Kr. 38 and Kr. 40, must, therefore, be considered as a moderate one under present conditions. Of late years British papermakers have been in the habit of buying in the summer and early autumn large quantities for winter stock. In the spring of 1904, there were nearly 100,000 tons in stock in Norway and Sweden. At this moment the stocks have disappeared on this side, and what the British papermakers bought last autumn is used up.

PULP AND PAPER MARKETS.

The pulp market during the past month has settled down to the quietness that was expected to follow the unlocking of the rivers and the freer movement of pulpwood. Some of the mills have closed down in the States, and the trade there has to acknowledge an over-production. There are signs of over-production in Canada, but not to so great an extent as across the border. During the month two mills in Ontario have reduced their output, and a small war in paper bags has led to the cutting of prices by 10 per cent. or more, but this cutting does not seem to have been caused altogether by over-production.

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Paper Machines,
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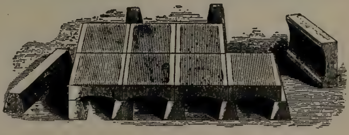

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Wood Pulp, FOREIGN AND DOMESTIC Rags AND Paper Stock

140 Nassau Street, New York City.
Cable address "AFFECTIVE," New York.

Canadian mechanical pulp is quoted at $12 to $13, according to point of shipment.

Wood fibre is quoted in New York, as follows: Sulphite, bleached, foreign, $3.25 to $3.35; domestic, $2.50 to $3.25; foreign unbleached, $2.20 to $2.50; domestic, unbleached, $1.85 to $2.10; soda fibre,

PRESSES, HYDRAULIC or KNUCKLE JOINT.

Heavy Duty Pulp and Baling Presses.

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The valves are made so as to be easily and cheaply replaced and can be got at without using wrench.

We also make boiler feed and other pumps.

Particulars and references on request.

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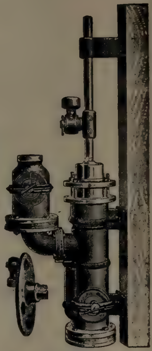

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Soda Ash 58 per cent.
Bleaching Powder 35-38 per cent.
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domestic, bleached, $2.25; foreign, bleached, $2.90 to $3.20. Of the market for mechanical pulp, the Paper Trade Journal says: Quotations remain about the same, as there has been no material increase in the demand to offset the present large production of the mills. Canadian ground wood is still being offered on the basis of $12 at the mill. On domestic pulp the asking price is about $15 at the point of manufacture.

—The annual report of the Crown Lands Department of Ontario has been issued. The Hon. J. J. Foy, the new Minister, reports that the total revenue from woods and forests was $2,650,782.56. Of this, $1,664,268.31 was received on account of bonuses; $919,471.21 on account of timber dues; $64,997.03 on account of ground rent, and $2,056 on account of transfer fees. Regarding pulp-wood, the Minister says: There is a considerable

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LONDON	77a Queen Victoria Street, E.C.
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ANGOULEME (France)	43 Rue Louis Desbrandes.
LYONS	54, Cours Gambetta.
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falling off in the quantity of pulp-wood taken out during the year. This is accounted for by the fact that the Sault Ste. Marie Pulp and Paper Company did not take out any pulp-wood last season. The Sturgeon Falls Pulp Mill has been operated continuously during the season and an extensive addition is now contemplated, which will practically double its capacity. The Spanish River Pulp and Paper Company, it is understood, have succeeded in getting their dam into place and before long their mills will be in operation. The other pulp concessions, which are in existence, are the Nepigon, Rainy River, Keewatin and the Blanche. The first four of these have not yet proceeded with any active developments. The territory covered by the Blanche River pulp concession has been almost entirely settled, and the lands have passed into the hands of settlers.

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Heating and Ventilating by
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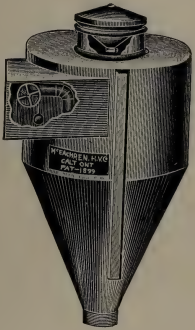

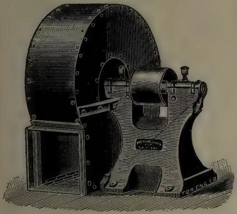

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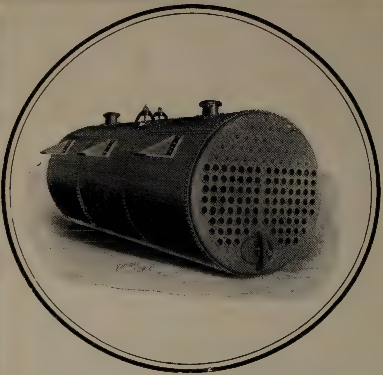

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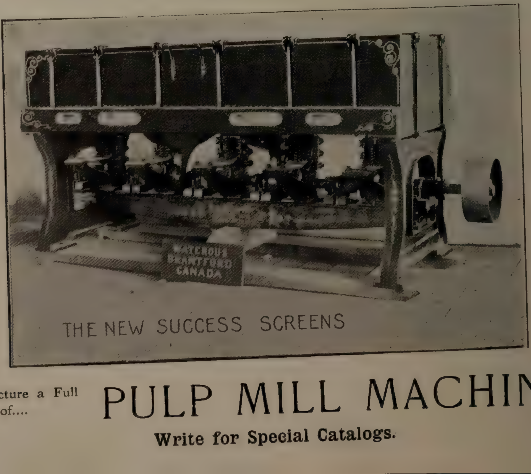

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Sturgeon Falls Pulp Co.	9,000 h.p.
Chicoutimi Pulp Co.	7,500 h.p.
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Every Grade of Waste for Paper Making.

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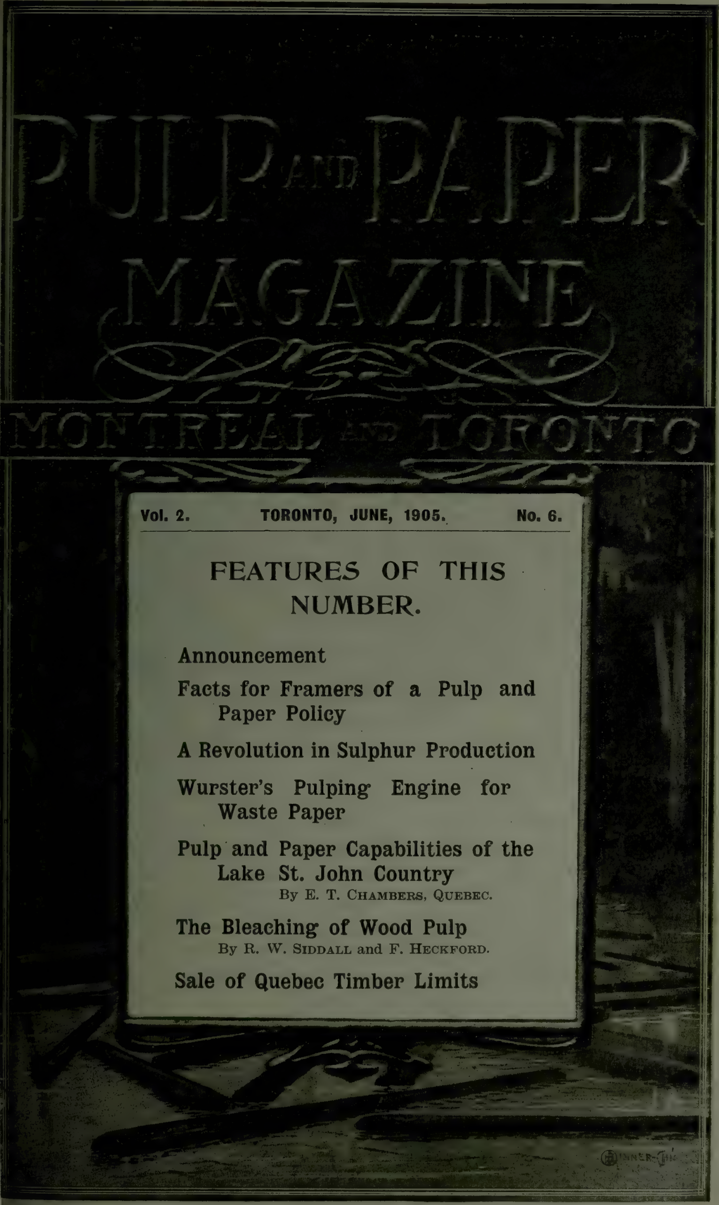

PULP AND PAPER MAGAZINE

MONTREAL AND TORONTO

Vol. 2. TORONTO, JUNE, 1905. No. 6.

FEATURES OF THIS NUMBER.

Announcement

Facts for Framers of a Pulp and Paper Policy

A Revolution in Sulphur Production

Wurster's Pulping Engine for Waste Paper

Pulp and Paper Capabilities of the Lake St. John Country
By E. T. Chambers, Quebec.

The Bleaching of Wood Pulp
By R. W. Siddall and F. Heckford.

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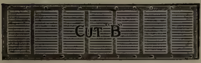

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INDEX TO ADVERTISEMENTS.

Atterbury Bros. 43
Beloit Iron Works 49
Benson & Co., W. T 10
Bentley & Jackson 4
Bertram's, Limited 6
Black-Clawson Co., The 7
Bowater & Sons, W.V 52
Bredt & Co., F. 10
Brunner, Mond & Co., Limited 44
Canada Paper Co. 51
Canadian Fairbanks Co, Limited, The. 37
Canadian Rubber Co. of Montreal 8
Carrier, Laine & Co. 48
Castle, Gottheil & Overton 9
Cheney-Bigelow Wire Works 38
Christie, J. 52
Christie, Limited, George 3
Cousland & Co., A. 10
Davis & Co., F. H. 43
Eastwood Wire Mfg. Co 2
Emerson Mfg. Co 37
Freese, Jean 3
Hamilton Mfg. Co., Wm 39
Hardy, George F. 9
Hawksworth & Sons Co., Limited, Alfred. 12
Hay Knife Co., Limited, Peter 38
Hough, R. 52
Huyck & Sons, F. C 5
International Pulp Co. 9
Jenckes Machine Co., Limited 12 & 50
Johnson & Sons, Limited, C. H 6
Kenyon & Son, James 45
Klipstein & Co., A. 11
Kimball, Herbert S. 9
Knight & Co., John 47
Lea & Coffiin, and H. S. Ferguson 9
Little & Walker 9
McOuat & Son, T. 44
Paton, Thomas L 3
Perrin & Co., Ltd., Wm. R. 44
Porritt & Sons, Joseph 10
Porritt & Sons, Limited, Samuel 52
Porritt Bror. & Austin 6
Pringle & Son, T. 9
Pulp & Paper Trading Co., The 38
Pusey & Jones Co 42
Quebec & Lake St. John Ry. 9
Quebec Dept. of Lands, Mines and Fisheries 40 & 41
Seymour & Guest 9
Sheldon & Sheldon 47
Smith Co., S. Morgan 51
Snell, Co., Samuel 43
Sullivan & Co., C. F 10
Union Screen Plate Co 3
Union Sulphur Co., The 45
Vogel, C. H 9
Wallace-Jaastad-Drewson 44
Waterous Engine Works Co., Ltd 50
Wertheim & Co., A. 46
Whittaker, Richard 11
Wilson, Paterson & Co. 12
Winn & Holland 44
Wurster, Dr. C. 42
Young, J. S 51

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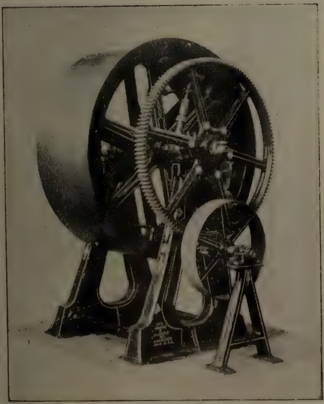

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UTILIZATION OF SULPHITE LIQUORS.

Numerous attempts have been made to prepare from sulphite liquors a sizing material, but with little success. Ekman worked on the subject for years. A sort of material has been obtained from the Mitschlerich sulphite liquor, but an addition of rosin size or other material is necessary before it is adapted for most sizing purposes. It is said that J. & J. Rogers & Co., of New York State, have experimented with a process devised by a Mr. Robson for the production of a size from their waste liquors. The factory is said to have worked up successfully one-eighth of its liquor, and is now laying down plant for the treatment of the whole. The liquors are evaporated under diminished pressure, and produce a thick black mass resembling treacle. From this material a size is produced suitable for sizing paper. This method is the result of experiments made with the sulphite liquor to avoid the necessity of allowing it to flow into the neighboring stream. The Papier Zeitung remarks that, "taking into consideration the failure of Ekman and others to solve this problem, we have our doubts as to the probable success of the plant, which we understand the above-mentioned firm have installed." A patent has been taken out in Germany by T. H. Knoesel, in which phosphate slag from the Thomas process is treated with sulphite liquor, and thereby converted into a more soluble form, which has the effect of increasing its manurial value. According to Herr Knoesel, the organic substances removed from the wood and contained in the sulphite liquor form humus in the earth, and promote the absorption of potash salts.

◆

George Mackay, of Watertown, N.Y., for seven years president of the International Brotherhood of Paper Makers, has resigned, and has been succeeded by J. T. Carey, of Palmer, N.Y.

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PULP AND PAPER MAGAZINE
OF CANADA

VOL. 3.—NO. 6. TORONTO, JUNE, 1905. $1 A YEAR. SINGLE COPY 10c.

Pulp and Paper Magazine

A monthly magazine devoted to the interests of Canadian pulp and paper manufacturers and the paper trade issued between the 15th and 20th of each month.

SUBSCRIPTIONS: Canada, Great Britain and the United States, $1 a year; to Foreign Countries, 5s. a year.

Changes of advertisements should be in the publishers hands not later than the 10th of the month, and, where proofs are required, four days earlier. Cuts should be sent by mail, not by express.

BIGGAR-SAMUEL, LIMITED,
PUBLISHERS
62 CHURCH ST., TORONTO.

ANNOUNCEMENT.

Beginning this month, the Pulp and Paper Magazine will be issued under new auspices as regards ownership. A controlling interest in Biggar-Samuel, Limited, the publishers of this Journal, also of the Canadian Journal of Fabrics, the Canadian Engineer, and the Canadian Machine Shop, has been acquired by the Monetary Times Printing Co., and the head business office, as well as the editorial office, will hereafter be located in Toronto; the offices in the Fraser building, Montreal, being retained as a branch office of all these publications.

The new president is Thomas Robertson (Robertson Bros., Limited, Toronto), a successful business man, with an international reputation as the inventor of confectionery machinery now in extensive use in the United States, Europe, and the British colonies; vice-president, James Hedley, for twenty-five years editor of "The Monetary Times," who has a wide acquaintance with the commercial and financial interests of the country; secretary-treasurer, Edgar A. Wills, for twenty years secretary of the Toronto Board of Trade, whose knowledge of Canadian business affairs is a guarantee that the business side of the Magazine will be in wise hands.

Mr. E. B. Biggar, editor of the Pulp and Paper Magazine, will continue to give the Magazine the benefit of his experience, and will remain on the board of directors of the new company.

It is hoped that association with the conductors of the oldest and most reputable financial paper of Canada will add strength to the paper, and that with the growth of the trade of the country, the pulp and paper interests and the Magazine will expand together.

FACTS FOR FRAMERS OF A PULP AND PAPER POLICY.

The census of the United States for 1900 gives the total consumption by the mills in the United States of all kinds of wood-pulp, viz.: soda, sulphur, and ground wood, as being for that year, 1,100,000 tons. The best informed men in the trade very generally agree that the estimated consumption for the year 1905 will be 1,500,000 tons.

The increasing demand for raw materials in the United States justified the estimate of pulp to be shipped from Canada to the United States for the year 1905 as 150,000 tons.

Large buyers and consumers of pulp-wood from Canada estimate the probable shipments of pulp-wood from Canada to the United States for the year 1905 as being from 750,000 cords, to 1,000,000 cords, which will be converted into ground wood and sulphite, representing at the former figures 550,000 tons of pulp.

Estimated tons pulp........	150,000
“ pulp from pulp-wood.	550,000
Total	750,000

which it will be observed represents a very large ratio of the total consumption in the United States. Individuals differ somewhat as to the figures expressed above, but not to a degree that in any way impairs their significance.

Assuming that Canada provides 750,000 cords of wood this year, and that instead of its leaving the country in this form, it be converted into ground wood and sulphite in about the ratios these pulps are used in making ordinary news, 550,000 tons for 330 days for the year would mean a daily product of 1,500 tons of ground wood and 333 1-3 tons of sulphite. The mills, to turn out this product, would represent directly and indirectly an investment of $10,000 per ton for ground wood, and $20,000 per ton for sulphite; in other words, an investment of $21,666,666. Assuming average conditions which require 3½ men per ton, it would mean the employment of 6,417 men, and if we assume families of six, this would mean a population of 38,502. The conversion of this raw material,—pulp-wood, into ground wood and sulphite, as indicated above, would mean a distribution of $3,000,000 per annum in wages, over and above what is now paid out in handling and shipping the pulp-wood.

The foregoing facts taken in connection with the steady increase in consumption lead to conclusions that must need be surprising to people who have not made a careful study of the situation.

The normal increase in consumption in the United States varies from 5 to 10 per cent. annually, assuming the export trade of manufactured paper remains stationary. This calls for from 250 to 500 tons of pulp per day during 1906 more than for 1905, and so on for each succeeding year.

The proportion of paper manufacturers in the United States who are more or less dependent upon Canada for pulp-wood is so very large that they dictate the policy of the association as a whole so far as legislation is concerned, and that policy at present is to maintain if possible, present conditions, viz., free pulp-wood.

The Forestry Commission of the State of Maine, which is the only State in the Union where large quantities of pulp-wood are to be found, reported one year ago that there was sufficient spruce then standing in the State of Maine to perpetually supply the then existing mills, assuming, however, that spruce would grow from seedling to maturity in thirty years. Since this report, machinery has been put down in Maine which increases her consumption. In addition to this, plans are being made and mills are building which still further increase the consumption, so that it is no longer claimed that Maine is self-sustaining.

The situation in New Hampshire has been studied with equal if not greater care, and those interested agree that if the mills in New Hampshire were confined entirely to spruce standing in the United States and tributary to those mills, the supply would be absolutely exhausted in seven years, even if no further machinery is laid down. But as a fact plants are being installed which will still further increase the consumption in the New Hampshire mills.

There is to-day under consideration the creation of a large bleached sulphite plant to be located on the American side of the St. Lawrence River, at Massena, in order to avail itself of low cost electric current, necessary in the manufacture of bleached pulp. This mill is expecting to derive all its raw material from Canada, and but for Canada's free wood to the United States, it would be necessary to build this mill in Canada. This one instance represents or will represent an investment of from $1,750,000 to $2,000,000.

So long as Canada provides the mills in the United States with what pulp-wood they need, Canada may look for comparatively little development in the building of ground wood mills.

It costs from 25 to 30 per cent. more to build a pulp mill in Canada than it costs to build the same plant in the States. The machinery whether built in Canada or built in the United States is priced to the purchaser at practically the United States cost with duty added. The same is true practically of all the metal supplies outside of machinery. To a lesser extent the same is true of the cements, of which large quantities are used in mill building. The cost of construction is further increased by reason of the long and more severe winters in Canada. Skilled labor in the mills costs about the same, no matter which side of the line they are built on. It costs more to ship a ton of pulp than it costs to ship the wood which that ton of pulp represents.

So that, even with the duty into the States removed, the Canadian manufacturer is at a disadvantage as compared with the United States manufacturer, so long as that United States manufacturer may secure free pulp-wood.

If, on the contrary, restrictive measures were taken covering pulp-wood, it would at once very materially increase the prices which the Government could secure at its limit sales, and would also set in motion plans already matured by United States pulp makers, who have provided themselves already with undeveloped powers in Canada, knowing or believing that the time was certain to come when Canada would no longer be willing to turn out free pulp-wood to the United States makers instead of entering upon the manufacture of pulp herself.

It is conceded by most of us that while the agricultural interests are and should always be a greater factor in the development of a country, its manufacturing life is more potent by far in the country's development and growth.

Pulp & Paper Currency

An important sale, by public auction, of timber limits in the Province of Quebec, will be held on the 22nd of this month in the city of Quebec. It is to be hoped that Canadian capital will interest itself to a greater extent in this sale than it did in the last sale of timber limits, when the choicest areas were picked up by United States firms.

A conference of representatives of the Scandinavian Wood Pulp Associations, the British Wood Pulp Association, and the Paper Makers' Association of Great Britain has been held in London, for the purpose chiefly of trying to settle the vexed question of sampling and testing pulp. The idea is to agree upon a standard by which uniformity in methods and results may be obtained, and an end put to the almost ceaseless disputes and claims made in reduction of bills. No agreement was reached, but a long step towards one has been taken by joint contribution towards a series of experiments, the results of which will be submitted to a future conference. As Canadian shippers of pulp to the British and foreign markets have been sufferers, along with their Scandinavian competitors, from these claims, the adoption of such a standard as proposed will be most welcome as giving confidence to exporters and relieving both buyer and seller from awkward and irritating differences.

In at least two prominent cases, the combination of United States mills to market their products through a trust company has not worked out to the advantage of the mills concerned. One example of this kind is the Interstate Paper Co., of Chicago, which was the selling agency for twelve western mills. These mills became dissatisfied during the recent spell of poor trade, and believing they would do better by selling on their own account withdrew from the combination. The explanations of the collapse of the plan are various. The Interstate Paper Co. undertook to control the book paper trade of the west, but some important firms refused to join, and the syndicate was not able to dictate its terms to its customers. Rebates given to favored customers, and preferences given for certain mills in the combine; also the disloyalty of some members of the corporation are other alleged causes. Doubtless the resentment, or opposition, which merchants, like the rest of the community, show to a combination whose chief effort is to raise prices, played its part. The other prominent case is that of the General Paper Co., against whom the United States Government entered an action, as recently reported, charging it with a breach of the anti-trust law. This corporation controlled the output of twenty-five paper mills making news, and the Government's action was no doubt due chiefly to the agitation recently raised by the daily papers of the big cities who were affected. The case has been going on for some time, and what with the production by the Government of contracts between the General Paper Co. and its constituent companies, and the extraordinary failure of memory of the company's secretary when examined on the elementary affairs of the company's business, the counsel for the Government believes it will be able, when he gets at the facts, to convict the company. Meantime the State Attorney of Wisconsin, who is conducting a case against the company, independent of the Federal Attorney-General, believes he will be justified in bringing an action to revoke the charter of the company, which was incorporated by that State.

According to United States returns, the imports of wood-pulp for the ten months ending April, 1905, were 142,387 tons, of which 111,884 tons came from Canada, 6,023 tons from Germany, and 24,480 tons from European countries other than Germany. This was a considerable increase over last year, when for the same period the total was 124,933 tons, of which 89,996 came from Canada. In 1903 the total imports were 95,285 tons of which 67,620 tons came from Canada. United States imports in paper stock from Canada have also increased largely in the past three years, the values for the ten months being as follows: 1903, $81,455; 1904, $119,372; 1905, $139,278. In the matter of manufactured papers Canada now ranks close to Great Britain as a customer of the United States, and the British Empire as a whole takes over two-thirds of the entire exports of the United States, Canada and the Mother Country alone taking a little over half. The figures for the ten months ending April, 1905, are: United Kingdom, $1,833,845; Canada, $1,685,027; total, $6,746,473. The exports to Canada were ahead of last year, when the figures for ten months were $1,366,024.

In proportion to population Canada is a far better customer for Great Britain than is the United States. In some lines we import more, not only relatively but actually, than our neighbors. For instance in writings, printings, and envelopes Great Britain exported to Canada in the four months ending April this year 11,110 cwt., valued at £15,407, against 4,710 cwt., valued at £10,558 exported to the United States. In other descriptions the Mother Country shipped to Canada in the same four months 3,027 cwt., valued at £6,972, compared with 3,982 cwt., valued at £11,022 sent to the United States. Australia, New Zealand, South Africa, and British India are better customers for British paper mills than any other countries of the world, foreign or colonial. For instance those four colonies and Canada together took from Great Britain in the four months this year writings, printings, and envelopes to the amount of about 197,000 cwt. out of a grand total for the whole world of 295,544 cwt. In other words, these five groups of British colonies already take two-thirds of Great Britain's exports in those lines of paper. To the paper trade, therefore, the colonies are already worth more to Great Britain than the rest of the world, even under the system of free trade. Under a preferential tariff it should be still more valuable.

As observed by the Toronto correspondent of a United States paper the late Ross Government of Ontario made itself pretty busy in the last days of its career, transferring public assets into private hands, by private treaty, and two of these schemes, which would have been presented to the Legislature for ratification, were pulp concessions. The correspondent adds: "The present policy is to deal with all such business, as it is reached, and to make revelations only as they become unavoidable or are provoked by the aggressiveness of the new opposition. Certainly, the Whitney Government would be placed in an awkward position, were it to recommend to the House any pulp-wood concession of the regular type, after all its members have had to say against the system of secret agreement, and in favor of open auctions. Hence, the prospects of any concessions that were pending when Premier Ross retired from office are far from promising." With regard to the leasing of water-powers, the Minister of Crown Lands stated, before the Ontario House prorogued, that the late Government had granted six of these on the Montreal and Blanche rivers, the lease in each case being for ten years. The Minister stated that the Government had not come to any conclusion regarding these powers. It will be remembered that Premier Whitney declared in favor of the public control or regulation, if not the public ownership, of such great natural assets as Niagara power, and it may be assumed that at least these powers will not be leased for a song to political friends or for private advantage. The disposal of power leases by public auction to the highest bidder, if not, then operation under Government control, will naturally be expected. The Dryden pulp board concession, it may be mentioned, got an extension, it may be mentioned, got an extension, but has not gone on with their work, nor have the holders of the concession to the Montreal River Pulp and Paper Co. yet accomplished anything in the way of construction. A third company of concessionaires, the Nepigon Pulp and Paper Co., which had a concession for three or four years, got an extension for two years more, but have done no building yet.

* * *

Wurster's Pulping Engine for Waste Paper.

In a recent number of Papier Zeitung (Germany), Dr. Casimir Wurster describes his pulping engine for treating waste paper so as to remove printers' ink. As is well known, printers' ink is prepared from lampblack, with a proportion of resinous and oily materials to fix it to the fibre, and these could only be removed by chemical processes which would damage the latter. Moreover, it is not possible to bleach the printers' ink so long as the latter is produced from lampblack. The author describes the method used largely in America in 1880, where he saw it in operation, as described by Hofmann in his "Text Book." The material at that time was derived almost wholly from the London market. It was free from wood, and sorted into hard stock and soft stock. The point to be noticed, and emphasized by Hofmann, was that each sheet had to be laid flat on to the top of the hot soda liquor, otherwise a portion of the printing ink was not removed. Since then the use of this method has been to a large extent given up, particularly on account of the progress made in the production of wood pulp, with a consequent lowering of the price of printed papers in England. This was followed by attempts to work up printed papers in other countries.

The author points out how the tedious process of placing each sheet in the hot soda liquor one at a time can be avoided by the use of the pulping engine. With aid of this machine the printing ink can be easily and cheaply washed out, provided that the pulp is afterwards sufficiently washed in the washing Hollander. The printed paper is fed in the dry state into the pulping engine, together with a stream of hot water. At the same time, from another vessel, provided with a cock, a definite amount of soda liquor is also run in. The soda dissolves the resin in the paper size; this forms a sufficient quantity of resin soap to give the emulsion with the printers' ink, so that it is freed from the paper and distributes itself in a liquid on washing the pulp in the washing Hollander. After a sufficient length of time a very pale grey pulp, giving an almost white paper, was obtained. As a general rule, it is well to make the water in the washing Hollander weakly alkaline.

When mechanical wood pulp is present the alkali gives the pulp a yellow tint, which, however, is discharged on the addition of alum. To promote the formation of an emulsion, it is sometimes advisable to add a little soap, either resin o fat soap, and this is absolutely necessary in the case of unsized papers. As printers' ink contains, besides resin, a certain quantity of oily constituents which are not saponified, this oil remains free—or, rather, in suspension—as an emulsion. In the course of the process the resin fillers and short fibres are lost in the wash waters.

In the American process, it was necessary to bleach the pulp. This is, however, no longer necessary when the pulping engine is employed, as the pulp is not colored in the same way when subjected to a boiling process. Of course, it is a matter for calculation as to how far it will pay to work up waste papers in this manner, but in any case the necessary conditions are the possession of a pulping engine, plenty of water, and good large washing Hollanders.

* * *

A Revolution in Sulphur Production.

Ever since the United States started on its career as an independent commercial nation, it has been an importer, but practically never an exporter, of sulphur. For many years there has been, commercially speaking, only one sulphur-producing country in the world, and that is Sicily, whence a corporation known as the Anglo-Sicilian Co., has supplied the sulphur-consuming industries of all nations. It was, therefore, a surprise to the trade of both hemispheres when, last October, a cargo of 3,000 tons of United States sulphur arrived at Marseilles, France, from the works of the Union Sulphur Co., in Louisiana, and was sold in competition with the Sicilian product.

As sulphur, otherwise known as brimstone, is a large and essential element in the production of sulphite wood fibre, and as the Union Sulphur Co. is already shipping large quantities of high quality sulphur to Canada in competition with the European article, the origin and development of this new American industry will be of interest.

By way of preface, it may be stated that Canada's imports of sulphur in its various forms varied in the last ten years from $200,000 to $325,000 per annum, the quantity in 1902 reaching 24,412,737 lbs., practically all being derived from Sicily.

The remarkable change in the world's sulphur trade, which the operations of the Union Sulphur Co. are bringing about, is due to the scientific skill of Herman Frasch, a chemist for several years connected with the Standard Oil Co., and already famous as the discoverer of an improved process for refining Ohio crude oil, of a process for manufacturing soda ash and a vacuum process for making salt.

For many years it was known that large deposits of sulphur existed in the United States, but it was impossible to mine it profitably until very recently. The discovery by Frasch, of a process which solved the difficulty, occurred in 1891. Sulphur deposits were discovered in Calcasieu Parish, La., thirty-five years ago, while petroleum boring was in progress. The sulphur found was practically useless, however, being buried under 400 feet of quicksand. The rock being porous and filled with water containing sulphureted hydrogen, the sinking of shafts was impossible by old methods. After millions of dollars had been spent in attempts to reach the sulphur, it was decided by Mr. Frasch to extract it by the application of water, superheated under pressure to many degrees above boiling point. It is then forced by means of iron pipes into the sulphur rock. The sulphur, being insoluble in water, and of greater specific gravity, falls to the bottom of the well or deposit, from which point it is raised to the surface by means of an air pump. On the surface it is allowed to congeal, and is then ready for shipment.

The details of the Frasch process are described by a New York pharmaceutical journal as follows: A well is drilled in the same way as for petroleum, to the bottom of the sulphur bed. Down this is run a system of pipes, one within another, which reaches not quite to the bottom. The outside incasing pipe is ten inches in diameter; within this is a six-inch pipe, inside of which is a three-inch pipe, and inside of all is a one-inch pipe. Down these pipes heated water at 330 deg. F. is forced under pressure, which melts the sulphur in the rock. The sulphur, melting, runs to the bottom of the well and this pure liquid sulphur is forced to the surface by compressed air, which is driven down the one-inch pipe. The compressed air mixes with the sulphur in the well, and lowers the specific gravity of the column inside the pipe to such an extent that it quickly rises to the surface. As previously stated, the rock is porous and naturally holds sulphur water, as well as sulphur, and, indeed, the former is greater in volume than the latter. It was this fact that made earlier mining ventures impossible of success. When the cavity at the bottom of the well, made by the mining operation, becomes so large that the influx of the sulphur water exceeds the flow of the hot water forced down, cold water from the rocks flows into the cavity. The production of the well then lessens until enough water has entered to offset the hot water which has been used. The more hot water is introduced, the easier it is to work the wells, because the natural sulphur water itself grows heated, and the rock all through the bed becomes heated in consequence. Already the output has risen from 2,000 tons to 23,000 tons per well, on account of the cumulative effect of the constant inflow of hot water. At present, two wells are in operation, producing five hundred to seven hundred tons of pure sulphur a day, while the monthly output is 15,000 to 16,500 long tons.

When the liquid sulphur is raised to the surface, it is pumped into reservoirs. One of our illustrations shows it actually running out of the pipe. In these reservoirs it solidifies. The usual custom is to float one-inch layers of the liquid on to a previously solid sulphur foundation, after which another tank is treated in the same way. When shipments are to be made, men are put to work on the solid sulphur, who pick it out in lumps. A pile of these ready for shipment may be seen in the foreground of another of our illustrations. The flat surface in the foreground of our second photograph is solid sulphur, ready be broken up at any time. The quality of the output of the Union Sulphur Company is 99.9 pure.

What has been the effect on the commercial market for sulphur of this utilization of those deposits in Louisiana, so long resisting all effort? To consider this we must bear in mind a few statistics. The annual consumption in the United States and Canada is about 185,000 long tons of elementary sulphur. The present market price is about $21.75 per long ton, ex-vessel New York. Until the last few years the production of domestic sulphur averaged less than one per cent. of total consumption. In 1902 the domestic production of elementary sulphur was 7,443 long tons, and our importations 174,939 long tons, while the production of domestic pyrite was 104,129, and our imports 300,915 long tons. It is easily seen, then, that the United States has until very recently depended on Europe for the bulk of its sulphur supply. Indeed, the United States is the largest consumer of sulphur in the world. The manufacturers of sulphuric acid, the refiners of petroleum, and the manufacturers of artificial fertilizers

Melted Sulphur Filling a Tank.

use great quantities of it. The paper pulp mills also consume a great deal. Of these latter, a recent United States Geological Survey report says: "By far the greater part of the sulphur consumed in the United States is used in the manufacture of paper stock, by the sulphite process. The wood pulp is digested under pressure with sulphurous acid or the acid sulphite of calcium and magnesium, which, reacting upon the liquid and other incrusting materials of the fiber, transforms them into soluble products, which are subsequently removed in the liquor."

The United States consumption of sulphur last year was a record breaker. It was 508,578 long tons, of which we mined 122,126 long tons, and most of this was in the form of iron pyrite. There are now worked but three sulphur deposits in the United States, in Louisiana, Nevada, and Utah, and their output is relatively in the same order as they are named. The Louisiana production is the important factor, and it is expected that it will eventually reach a size suitable for all our domestic needs, doing away with the necessity of importations.

The Solidified Sulphur.

Before the inception of the Frasch method, four other companies had attempted to mine the Louisiana beds unsuccessfully. The natural difficulties of porous rock, gravel, quicksand and sulphur water in the deposit, which have already beeen mentioned, made the old method of sinking by shaft very costly, and finally forced the abandonment of the enterprise. Moreover, the high wage scale in this country and the steep railway freight rates to interior points, made it impossible to produce sulphur under old methods at a figure which could give a profit in competition with the Sicilian sulphur, produced as it is by low-priced labor and shipped at small ocean freight rates.

The Sicilian Industry.

The Sicilian combination is primarily the Anglo-Sicilian Sulphur Company (Ltd.), a concern organized chiefly by English capital. For many years it has had supreme control of the sulphur market of the world, and has regulated the price, seldom allowing it to drop below $22 a long ton. The mines of the company are in Sicily. In competing with this new adversary, the Union Sulphur Company, which has suddenly risen to such importance in the United States, through the successful operation of the Frasch method of mining, the Anglo-Sicilian Company has had the advantage of low labor cost. On the other hand the methods of extracting sulphur from its ore are of necessity slow and costly. Instead of a sulphur 99.9 pure, produced by one process, the Sicilian Company mines an ore which must be reduced. There are three methods of doing this in use, the Catania, the Gill and the Fiocchi, all either primitive or costly. The first takes ten to twenty days and consists in merely burning the piled up sulphur ore and catching the liquid sulphur as it runs out. The Gill requires small iron ovens and is fairly speedy, but costly. The Fiocchi consists of the use of double shelled iron receptacles for the ore, and the introduction of steam between these shells, which melts the sulphur. Very hard ore cannot be melted by this last process. The Sicilian sulphur exports in 1902 were 467,317 long tons.

The expense necessitated by this tedious refining process equalizes the price of the Sicilian and American product. But the American has the advantage of greater purity. The Sicilian Company is alive to the danger of menacing its former comfortable control of the world's sulphur supply. Already the American product has been shipped to France, a market consuming much sulphur, using it to prevent the spread of disease of the vines. On this subject Consul-General Skinner reported:

"The requirements of this country (France) are 90,000 tons a year, nearly all of which is used to prevent the spread of cryptogamic diseases of the vines.

"Heretofore the Anglo-Sicilian Sulphur Company (Limited), has had a virtual monopoly of the market. Second fine Sicilian brought $20.08.

"The last-named grade is the one for which the important demand exists, and against this inferior quality the American producers offer a sulphur 99.9 pure. The lowest prices at which Sicilian sulphur has been sold in Marseilles of which I find any record, were thirty-nine cents less than the above quoted prices in 1897, and were offered under the stress of exceptional conditions in Sicily. At the general meeting of the Anglo-Sicilian Company, on October 14th, in London, the chairman reported gross profits amounting to $914,430, against $752,590 in the previous year. Exports had increased 20,000 tons. The chairman warned the shareholders that the company was a trading concern, and liable to the vicissitudes of trade. Sicily, he said, had been virtually the sulphur producer of the world, and there had been practically no serious competition from other sources; but it was this year threatened with competition by certain mines in Louisiana, where it was claimed that a considerable quantity of sulphur could be produced."

The Struggle of Rival Companies.

The Anglo-Sicilian Company did not quietly acquiesce to an invasion of the French market by the Americans. It brought its extensive influence to bear on the French authorities, protesting that the American shipment should not be admitted as raw, crude sulphur, according to its classification on the manifest; that it was too pure to be elementary sulphur, and that it should pay the import duty on refined sulphur. Accordingly, the French authorities held up the importation for investigation. The difference in duty would have amounted to about $20,000, and would have killed any profit for the importers, the Union Sulphur Company. That concern, therefore, protested vigorously, through the State Department, and our

Lump Sulphur Ready for Shipment.

Consul-General Skinner, at Marseilles. A French commission of three was appointed to take testimony. The Union Sulphur Company made a thorough exposition of its whole mining process before this board, using affidavits, photographs, and witnesses. The board, one member dissenting, decided in its favor, on the grounds that the American sulphur must be elementary (no matter if it was 99.9 pure), since it was not put through any refining process, but was mined direct in that condition.

Future of Prices.

As to the future, a member of a most prominent firm dealing in sulphur said: "I do not look for any decided lowering of prices. It is not likely that the Union Sulphur Company will cut values. What would it gain by it? It has already proved its ability to dominate and control the home market. It is selling all it can comfortably produce with its present plant. True, by cutting, it might freeze out the foreign importations, but it would itself make less money. It is, you see, not suffering from over-production, nor is it seeking hard for outlets. The shipment to France was perhaps more for strategic reasons than anything else. It wished to show its power to the Anglo-Sicilian crowd. It has successfully done so, and established a precedent, so it is plausible to suppose it will now rest on its laurels and come to some amicable arrangement with the Sicilian Company regarding the maintenance of prices. It is true that if the Union people cut prices to about half the present range, that the demand for sulphur to manufacture acid would increase stupendously. But how could it pay the company better than the present situation does? No, I do not expect any declines. The price will stay just about where it is, and be comfortably controlled within the confines of fifty-cent fluctuations, as in the past."

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The Pulp and Paper Capabilities of the Lake St. John Country.

By E. T. D. Chambers, Quebec.

There is only one condition, and that a political one, which at present stands in the way of northern Quebec becoming the greatest pulp and paper producing district in Canada. This condition is the provision made by the late Government of the Province of Quebec by which the export of pulp-wood for manufacture in American mills is facilitated. Now that there has been a change of administration, it is hoped that the order-in-council creating this condition will speedily be removed. The Government has already been petitioned on the subject by the Quebec Board of Trade, and there is a very strong feeling on the subject throughout the Province. As soon as the law governing the export of the raw material has been changed, there will rapidly occur a largely increased demand for water-powers in northern Quebec, and while there is likely to be an abundance of these for many years to come, the best and cheapest of those now available, and those most advantageously situated for manufacturing purposes, will undoubtedly change hands. The present is, therefore, an opportune time for securing desirable powers, especially as this northern country seems to be on the eve of great railway development. Some of the largest ones in the immediate vicinity of Lake St. John itself are in the hands of the Oyamel Company and other large American concerns, and just as soon as it is definitely known by American manufacturers that they will be unable to export more Canadian pulp-wood for manufacture in their present mills across the border, there is certain to be a rush for Canadian water-powers to permit of the establishment of more enormous pulp and paper establishments within easy reach of the power to be generated from them, and of the removal here of a number of the

American mills, many of which would be extremely short of the raw material were the Canadian supply cut off from them.

Even with all the facilities afforded by the existing laws and regulations of the Crown Lands Department of Quebec, for the furnishing of a supply of raw material from Canada to enable the American manufacturers to compete with Quebec makers of pulp and paper, there has been an enormous development in recent years of the pulp and paper industry in northern Quebec. There are already fully half a score of pulp mills in the Lake St. John country, one of which, that of the Chicoutimi Pulp Company is one of the largest in existence, having an annual capacity of some seventy thousand tons. Then there is the enormous concern at Grand Mere, in which so much American capital is invested, and many more, including that of the Belgo-Canadian Company, the Price Bros.' mill for pulp and cardboard, at Jonquiere, the Metabetchouan factory and those of the Ouiatchouan, the little Peribonca, and others.

The Oyamel Company, already mentioned, controls most of the marvellous water-powers of the Grand Discharge, and the next few years are pretty sure to see this part of the country very thickly dotted with pulp and paper mills. The great advantage of the mills situated in the Lake St. John country is their facility for shipment of their products to Europe. The Chicoutimi Pulp Company ships the bulk of its output direct to Europe by steamships which ascend the Saguenay river to Chicoutimi, where the mills of the company are situated, while all the other mills in the district possess direct communication either by rail or water or both, with Quebec and Chicoutimi, having thus the choice of two ports of shipment, for while the eight or ten steamships annually loaded by the Chicoutimi Pulp Company ascend the Saguenay to the city of Chicoutimi, so also at Quebec the trains of the Quebec and Lake St. John Railway, loaded with pulp, paper and other products, are run along the wharves of the port to the very side of the ships into which the freight is transferred.

In addition to the enormous pulp-wood territory now served by the Quebec and Lake St. John Railway, and the still greater territory farther north awaiting railway communication for its development, another new district is this year being opened up by the construction of a branch line of railway, forty miles long, which starting from a point on the Quebec and Lake St. John Railway, 78 miles from Quebec, runs in a northwesterly direction to La Tuque Falls on the St. Maurice river. Here there are falls, which a newly formed company intends to develop, with the expectation of producing some 30,000-h.p. The new branch will open up twelve thousand miles of timber limits in the St. Maurice Valley, above La Tuque, the operations in which, even at present, rank next in magnitude to those of the Ottawa, employing 6,000 to 7,000 men. The capacity of the falls at

Pulp Mill of the Peribonca Pulp Company, North of Lake St. John, Que.

La Tuque is double that of the cataract at Grand Mere, which has built up quite a large town there within the last few years. Both the country through which the new branch railway runs, and much more that will be made accessible by it, produces enormous quantities of pulpwood, as well as considerable timber of superior quality. The forests and water-powers in this section of the country are reported by the surveyors and others who have seen them, to be well worthy of inspection, and it is expected that the new line will be open to La Tuque in the month of December next.

The vast territory of which Lake St. John is the centre, and which is commonly spoken of as the Lake St. John country, includes some thirty thousand square miles or over 19,000,000 acres, which is double the size of Denmark and of Holland, and nearly three times that of Belgium. As regards its water-powers, the Government reports show that upon seven miles alone of the Peribonca river, starting from the head of its navigation, fourteen miles from its mouth at Lake St. John, 300,000-h.p. could easily be developed. The Mistassini could be made to supply nearly 50,000-h.p. in its lower waters, and one of its tributaries, the Mistassibi, could give from 75,000 to 80,000-h.p. within a distance of thirty-five miles from its mouth. The first 56 miles of the Ashuapmouchouan, another feeder of Lake St. John could be made to develop 100,000-h.p. And so on with almost all the rivers flowing into the big inland sea, irrespective altogether of the enormous falls and rapids of its great and little discharges. One official of the Government has estimated that a line drawn around Lake St. John, a dozen miles to the north of the lake, thirty to the north-west, fifty to the west, two to the north, and ten to the east, would circumscribe over 650,000-h.p., which greatly exceeds all the water-power of all the rivers in Sweden and Norway, where the pulp industry is carried on to so considerable an extent.

Pulp Mill of Montmagny Light and Paper Company, Montmagny, Que.

The supply of raw material for pulpwood in the Lake St. John country is practically inexhaustible. Of the more than 19,000,000 acres contained in it, less than 500,000 acres are under cultivation. The remainder is, for the most part, covered with forests. The principal timber is spruce, balsam fir, white birch, cypress, and pine. White, red, and black spruce constitute more than 75 per cent. of the timber supply. Fire has ravaged this territory in many places. The disastrous effects of the great conflagration of 1875 in the Mistassini region are no longer visible. The second growth is as fine as the first, as regards the size of the trees, while the wood is sounder and less knotty. In the Peribonca region the wood is rather small for sawlogs, but of the best kind for pulp.

The basin of the Great Peribonca covers an area of 8,320,000 acres. There is certainly no exaggeration in estimating at five cords per acre the quantity of black and white spruce suitable for pulp-making in this region, which would make 41,600,000 cords.

The basin of the Mistassini covers about 4,800,000 acres of woodland, which at five cords per acre would give 24,000,000 cords of pulp-wood.

The region drained by the Ashuapmouchouan contains at least 3,200,000 acres of forest which would also give 16,000,000 cords of pulp-wood at the same rate of five cords per acre.

In the remainder of the Lake St. John country, that is to say the southern part, drained by the Ouiatchouan, Metabetchouan, and other rivers, there are also 3,200,000 acres of forests of coniferous trees, which could easily furnish another 16,000,000 cords of pulp-wood. These districts then represent a total of at least 97,000,000 cords, or in round figures a hundred millions, for the estimate of five cords to the acre is far too small; and this represents only the product of the first cut, for those versed in forestry do not need to be told that with the exercise of due care in the cutting of the wood, spruce forests can be cut over again every twenty years.

It is not so very long ago that a statistician reported that the paper mills of the United States consume one million cords of wood annually. The Lake St. John country could supply this quantity for a hundred years, merely with the first cut of its forests of coniferous trees. Estimating the quantity of wood required to make a ton of pulp at a cord and a half—the maximum figure—the one hundred million cords of wood in this territory would permit of the manufacture of over sixty-six million tons of pulp, from the first cut alone, or one million tons per annum for 66 years.

The above figures convey a good idea of the importance of this territory with reference to the pulp and paper-making industry, and it is worth noting that the price obtained in England for Canadian pulp is considerably higher than that given for the Scandinavian article. C. Langelier, of the Crown Lands Department, at Quebec, is authority for the statement that if the requisite capital is devoted to it, there is enough wood and good motive power in the Lake St. John country to supply wood pulp to the half of Europe.

It is a remarkable fact, too, that lime and almost everything else needed in these manufactures are to be abundantly found throughout this territory. Lime is needed for the treatment of wood with bi-sulphite. This lime is found almost everywhere in close proximity to the great water-powers above mentioned. On the west it constitutes the beach of Lake St. John from Pointe Bleue to the mouth of the Ouiatchouan river, a distance of about ten miles. At Roberval, close beside the wharf, pure limestone is disposed in layers six to ten inches thick, and is taken out with a crowbar with hardly any mining. "On the shores of Lake St. John," says Richardson, "at nearly all the places where we found fossiliferous limestone, there is good material for making lime."

Resin, as the trade well knows, is used in the manufacture of certain kinds of paper. The forests of banksian pine in the various parts of the territory of Lake St. John, will probably permit of that substance being manufactured on the spot. This wood is so resinous that when used as fuel it produces so much soot that the stove-pipes are almost immediately choked with it.

In the manufacture of some classes of paper, especially wall papers, certain mineral substances are used for filling. If pulverized mica, as claimed, can be utilized for this purpose quantities of that mineral can be had in close proximity to the factories.

Building materials are also very plentiful. Nearly everywhere, feldspathic limestones are to be found. These are easily cleaved into rectangular blocks, well adapted for building purposes. A short distance from the mouth of the Metabetchouan, as well as in several other places, there are limestones which are easily cut and which would supply building stone of all dimensions. As to clay for making bricks, Richardson states that it is found everywhere in abundance, from Ha! Ha! Bay to the west of the lake, on the south and on the east, and that, apart from the sandy deltas of the rivers, it would be difficult to find a place where there is no clay for brick-making.

The great water-powers of the Peribonca and the Mistassini are connected with the railway by means of the steamboats running regularly on Lake St. John. The transportation of building materials and especially of heavy pieces of machinery could, therefore, be easily effected without heavy expense. The pulp and paper produced by the factories on these rivers could be carried by steamer to Roberval and thence shipped by Quebec and Lake St. John Railway to Chicoutimi or Quebec; the harbor at the latter port having been recently deepened by the Federal Government, so as to permit large steamers coming there with perfect safety, while there is the magnificent port of St. Alphonse a few miles down the Saguenay river below Chicoutimi. With a product of half a million tons of paper per year, which is well within the capacity of the Lake St. John country, the return might be estimated at $20,00,000, which conveys some idea of the resources and the wealth of one corner of the Province of Quebec —though, of course, one of the most highly favored of its territories—so long as its forests are wisely preserved and intelligently utilized. It has been well said that it is doubtful whether the Yukon, with all its gold, can produce as much for as long a time.

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The Cushing Sulphite Fibre Co.'s Case.

The lawsuit over the affairs of the Cushing Sulphite Fibre Co., at St. John, referred to recently, is being continued. Geo. S. Cushing, of St. John, who holds $16,000 of the company's bonds, asked that it be put into liquidation as interest had not been paid on the bonds. This move is understood to be a counter to the action of Capt. Partington, who is the chief shareholder in the mill, and also a bondholder, and who took out an action to foreclose a mortgage through the Eastern Trust Co.

In the action for the winding-up order, evidence was produced to show that the operation of the mill in the year ending February, 1904, had a loss of $1,500, while in the year ending February, 1905, it showed a net profit of $31,000. Mr. Schofield, the secretary-treasurer of the company, said that since April 1st the profit was at the rate of $5,000 a month. Under cross-examination he stated that the directors had not so far made any effort to pay interest on the bonds, though he thought that in the present prosperous condition of the company's affairs, it could pay the interest. He said the plant was in good condition, the machinery having been been kept in repair, that the company's credit was good, and the outlook for the future bright.

T. McAvity, vice-president of the company, when being cross-examined, stated that the foreclosure suit had not been considered by the board of directors, and that they had made no request to the bondholders for delay, nor taken any steps to raise the interest due. When pressed by the Attorney-General, he admitted that the directors were allowing the property to go to sale under the foreclosure, and stated that he thought it should realize enough to pay the bonds.

Dr. Pugsley then put the following questions to the witness: "Do you think, as vice-president of the company, whose duty it is to guard the interests of the smallest shareholder as well as the largest, and of the smallest bondholder as well, that you are discharging that duty by simply lying back and allowing the property to go to a forced sale under foreclosure?" The witness stated that he thought so, under the circumstances. Asked to explain what he meant by the circumstances, he said that as the bonded indebtedness was large and there was much overdue interest—about $100,000—he thought it impossible to do anything except let the property go to sale, but stated it was his intention to bring the matter before the annual meeting of shareholders this month.

Dr. Pugsley asked if the directors had taken any steps to advertise the present large earnings of the company with a view to attracting purchasers, to which witness said no.

The Attorney-General placed in his hands a copy of the Messenger and Visitor, being the only paper in which the property was advertised, and asked Mr. McAvity if he did not believe that the desire and intention of Captain Partington was to have the property sacrificed at a forced sale and so wipe out the interests of the smaller shareholders and bondholders. In answer to this, Mr. McAvity said he had no reason to entertain such an opinion, and being pressed further, declined to express an opinion.

After examination of witnesses and argument by counsel, judgment was rendered by Judge McLeod. His Lordship reviewed the history of the company, which was incorporated in 1898, with a nominal capital of $500,000, of which the preferred stock was $125,000, and ordinary stock stock $375,00. The ordinary stock was all subscribed, but no preference stock was issued. The directors are: Edward Partington, Thomas McAvity, William H. Murray, George S. Fisher, A. H. Hanington, C. C. Springer, and R. B. Emerson. Edward Partington resides in England, and Mr. Springer resides in the United States; all the others in St. John. In 1901 the first mortgage debentures were issued, amounting to $250,000. They were secured by a mortgage made to The Eastern Trust Co. The petitioner owns $16,500 of the bonds and upwards of $20,000 stock. No interest has ever been paid on any of the bonds, and there is now about $100,000 interest owing. Of this $5,900 interest is owing to the petitioner. On the 9th of December, Edward Partington and other shareholders and bondholders residing in England requested the trust company to foreclose the mortgage on the 3rd of January. The trust company elected and declared as due the principal of $280,000, and proceedings were taken to foreclose the mortgage and an order of the court was obtained for the sale of the premises, the sale to be on the 15th of July next.

It is alleged that the company has a considerable amount of property not covered by the mortgage. The petitioner in February, 1905, presented his coupons to the Bank of New Brunswick, where they were made payable, for payment, and they were not paid; the reply was: "No funds." He then made a demand under the Winding-up Act, and the interest was not paid. On this demand this application for a winding-up order was made.

The first question arose was the petitioner a creditor? That is, could he himself proceed against the company or must he act through the trust company? The second question was, being a secured creditor, could be demand a winding-up order? His Lordship then went into the terms of the bond and the mortgage, and he concluded that the mortgage appeared to make the trust company a bare trustee; and the contract under the bonds was a contract between the Cushing Company and the bondholders, and there was nothing in law to prevent the bondholders, from proceeding to recover the amount. There was a provision in the mortgage that no person could proceed to foreclose the mortgage except the trustee. Judge Barker had held that a bondholder could proceed in his own name to foreclose a mortgage, simply making the trust company a defendant. As to the second question, he cited several cases to show that the fact of the petitioning creditor being secured was not a bar to his petition. In stating his conclusion, he said: "If I am right that the petiioner is a creditor of the company and an proceed upon his bond he can proceed t common law and obtain a judgment on hat bond and have an execution issued pon it. It seems clear under this act that hat would be an act of insolvency for hich any creditor could place the comany in liquidation. I cannot see that a ifferent result would follow if under that ery same act the secured creditor makes demand for payment of his amount, and is not paid during the statutory time, hat is sixty days. That is also an act of isolvency and any creditor can proceed to ut the company in liquidation. That beig so it seems to me that the petitioner ould also proceed." He observed that the ompany had shown no cause for the nonayment of these coupons, and he must old it to be insolvent. "It is said here, nd it is a fact, that the great majority f bondholders and stockholders oppose e petition, and that therefore I should ismiss it. It is said although they were ot making money other years, they are ow making money and ought not to be opped. I think I should take into conderation the motives and reasons that rompt these creditors to make this objecon. I have before me now the fact that e company is now making money, but have also the fact that this property is be sold on the 15th of July, under a ortgage, and that at the instance of these ery shareholders and bondholders that are sking me to dismiss this petition. . . . look at this from another standpoint, that ese creditors and majority of bondholders nd directors, and even the trust company, ave come here and asked that this petion be dismissed in face of the fact that e property is being sold on the 15th of ly. It appears that the property has not en properly advertised. It has been advertised in one weekly newspaper that does not have an extensive circulation, and which would probably not be seen by one single man that would be likely to purchase this property. After this came up it was advertised in certain daily papers. The company asks that this petition be not proceeded with, yet this property was only advertised in one weekly newspaper. I think the referee has complied simply with the letter of the law and nothing more. I do not think the movers desire this petition dismissed on the ground that they would go on and pay all their liabilities, but that this sale should be proceeded with. It was urged that the company might lease the premises and still go on. That reason did not commend itself to my mind. If this property is bought by some stranger, it will be bought for the purpose of operation and not leasing, and the only way counsel can say that they might lease the property would be on the theory that the bondholders, themselves, would buy it in at some reduced price. In my opinion the petitioner is a creditor and entitled to make the demand within the meaning of the Act, and that he is not obliged to value any security he may hold, that there cannot be said to be any bona fide dispute as to this debt, that when the demand has been made and payment not made within the statutory time, the company must be deemed insolvent, and therefore, in my opinion the petitioner is entitled to the order. But as the matter is a very important one, I will not make an order now, but I will allow it to go by way of appeal to the Supreme Court, and if there is any difficulty, then it may be treated as a reference from me, and I will act on the order of the court.

The hearing was adjourned until the 19th of June.

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orestry and Pulpwood

Among the reports to the Crown ands Department of the surveyors erating for the Government in North ntario last year, that of T. B. Speight interesting as dealing with the more northerly regions, which will soon be tapped by the Temiskaming railway, and at some points by the Grand Trunk Pacific. Mr. Speight says of the region north of Lake Abitibi:

The Ontario Government has set aside a second tract of land as a forest reserve.

This reserve extends for twenty miles around the shores of Lake Nepigon, and is timbered with spruce, birch, poplar, tamarac, and cedar. There is also a small quantity of white pine. Spruce is the most plentiful, however, and frequently grows here to a diameter of 30-in. The area, including the lake, is about 5,700 square miles.

At the last meeting of the Quebec city Board of Trade the opening up of the James Bay region of the Province was strongly advocated, and the secretary was instructed to address the Provincial Government on the subject of "the immense quantities of pulp-wood which are being cut upon Government lands in the Province, and transported to the United States to be manufactured into pulp and paper, thus preventing the building of paper mills, which its vast spruce forests and water-powers make a most suitable industry for this Province, depriving our people of the labor and other benefits which such industries would give them, and adding to the danger of forest fires, and that this board would respectfully suggest to the Government the advisability of adopting the policy of the Ontario Government, which exacts that all timber cut upon Government lands must be manufactured in Canada and cannot be exported as raw material."

"Spruce, white birch, balsam, white poplar, balm of Gilead, and tamarac, in the above order of prominence, constitute the forest of the district, a few banksia pines and cedars occurring at intervals. In and about the valleys of the Abitibi river and smaller streams, spruce in fairly large quantities attains a diameter of from 15 to 24 inches, and will some day become an important asset in the way of lumber. White poplar and balm of Gilead also reach a diameter of 20 to 30 inches in the more favorable spots. It is a fair assumption that this region will yet be found of considerable importance in the production of pulp. In the parts more remote from streams, and particularly in the moss-grown areas, the timber growth is more stunted. Brûlé was met wtih on the third, fourth and fifth miles of th meridian line, the result of a fire, prob ably six or seven years ago. It extend to about a mile to the east and three o four miles to the west of that line. Near all the older growth tamarac in the who district is dead from the ravages of tl pest, but the trees of more recent growt seem to be escaping."

For some time past the Government c Quebec has been considering the creatio of a second great forest reserve, but tl matter was allowed to drag. The Ho A. Turgeon, the new Minister of Crow Lands, who has a keen appreciation (the importance of the forest assets of tl Province, took up the subject very soo after his accession to office, and it has be announced that a tract of land of abo 2,500 square miles, or say 1,500,000 acr has been set apart for this purpose in t Gaspe peninsula. W. C. J. Hall, superi tendent of the Laurentides Park, the or forest reserve at present in the Provin writes to the Quebec Chronicle an inte esting account of this reserve, the esta lishment of which he has urged for so time. The reserve commences at the 67 meridian and runs along the rear line Bonaventure County to Lac Edoua thence north along the 65th meridian the 49th parallel on which it runs, e along the rear line of Cap Chat, Romi Dalibaire and Cherbourg townships, tl along the 67th meridian to the starti point. The Government will not nec sarily prohibit cutting timber on this serve, but will control it and study problem of the succession of crops of ti ber. A large proportion of this dist is already under license to cut timber. Hall says the natural drainage of reservation is perfect. The soil is a fria sandy loam, up to the foot-hills of mountains, and white spruce is one of leading varieties of timber.

NEW COMPANIES.

The Gazette Printing Co., of Bri Columbia, capital $5,000. To carry the business of printers and publis in all its branches.

The Carbray Coal and Storage Co., apital $10,000; F. Carbray, J. Archer, V. Jalbert, G. Jalbert, and W. J. Car- ray, all of Quebec city. To carry on he business of lumber, pulp, pulp-wood nd paper manufacturers and exporters, tc.

A. E. Long & Co., Limited, Toronto, ave been incorporated to manufacture and ell paper boxes and carry on a printing nd lithographing business.

The Britannia Paper Co., Toronto, capital, $200,000, has received an Ontario charter, the directors are: T. Brown, C. Brown, St. Catharines; G. A. Turner, W. Bullock, and F. Sinclair, of Toronto. The company will manufacture and deal in paper, wood pulp and raw materials.

PERSONAL.

George E. Challes, Toronto, agent for pulps, has been for the past three weeks n the Western States.

Thomas Clark, financial agent of Buffalo, has visited Toronto, looking into the question of a Canadian branch shop for making the Dickinson pulp screen in which he s largely interested.

John R. Barber, of Barber Bros., paper manufacturers, Georgetown, has returned from an extended sojourn to Clifton Springs, N.Y., where he went for his health. Mr. Barber is looking much better for his rest.

John McMillan, head of the old publishing house of J. & A. McMillan, of St. John, died at his home in that city last month at the age of 72 years, from paralysis. He is survived by two sons and five daughters.

C. Howard Smith, selling agent for Ritchie & Ramsay, coated papers, has been appointed selling agent for the book and litho papers of the Cornwall Paper Mfg. Co., of Mille Roches, Ont., with office at 84 Wellington St. W., Toronto.

Mill Matters

John Sears, an employee in the paper mill of the E. B. Eddy Co., at Hull, had his left arm badly mangled while operating a machine.

J. C. Wilson & Co., paper manufacturers, of Montreal and Lachute Mills, have started work on their branch warehouse in Winnipeg.

The tribulations of the By-products Co., of Niagara Falls, N.Y., associated with Flax Pulp Limited, in the exploitation of a process for making paper from flax straw, have been brought to a head by an order of the court for the sale of the plant.

The Brompton Pulp and Paper Co. appealed from the judgment of the Superior Court, at Sherbrooke, which condemned it to pay one Savoie, $250 damages for the flooding of his lands. The appeal has been heard at Montreal and the judgment of the Sherbrooke court upheld. The first court held that the company's dam across the St. Francis, at Bromptonville, retarded the descent of the ice and caused the water to flow over Savoie's land. The question in appeal was as to proof of fact.

The Laurentian Water and Power Co.'s bill was practically killed in the Quebec Legislature last month by Speaker Weir. He opposed strongly the power sought to appropriate the private rights of the J. C. Wilson Company on the North river, at St. Jerome. This company, the Speaker said, had used their rights there in the manufacture of pulp, and any power they not taken up under their concession would be employed by them to manufacture on an enlarged scale. The company had had the banks of the river leased during the last eighteen years at heavy cost, and much of the power was put to productive use.

The St. John Sun reports that for some time negotiations have been going on for the transfer of large tracts of land on the Miramichi now held by the William Richards Company, Limited. Representatives of large paper and pulp companies of the United States have been there, and looked over the properties. In March last the Baylees Pulp and Paper Company, of

Binghampton, N.Y., sent down a number of their directors, headed by George C. Baylees, president of the concern. They inspected the property and Mr. Baylees was so much impressed with the land that he secured an option on the property, which option, however, has since then expired. Since then, President Chisholm, of the International Paper Company, accompanied by several of his directors, spent several days inspecting the properties at Boiestown and on the Miramichi. They secured an option on the property between $600,000 and $700,000 till June 15th. On the 8th inst. the William Richards Company received a telegram asking them if they would send a representative to New York to close arrangements for the transfer of the property. In response, H. H. Gunter, of Boiestown, and J. H. Rundle, of Chatham, left for New York. It is thought that the transfer of the property at $600,000 to $700,000, will take place in New York. If the company takes over the property, they will instal an up-to-date lumbering plant and within a few years they propose to build pulp and paper mills. Their headquarters will probably be at the mouth of the Taxis river on the line of the I.C.R., or else at Chatham. The property comprises 166,000 acres of good timber land of which about 115,000 acres is on the Taxis river.

Some of the London financial papers criticize sharply the position of the Western Canada Pulp and Paper Co., recently floated on the London market. Among those who are hopeful of the results is the Financial News, which in reviewing the flotation, says: "British Columbia is probably destined within the next few years to see the greatest development in this paper industry. Vancouver city is an almost unequalled centre for cheap distribution, whether to Western America, Australia, Japan or China. The long journey by sea to London is counteracted in this case by the exceptional cheapness of production of the paper, and we can probably look forward in a few years to the completion of the Panama Canal, which would still further improve transit by sea to Europe. The European markets, however, are not taken into account by this company, as those of the Pacific, which from its position it will control, already absorb about 800 tons per week of 'news' paper, and the demand is increasing. There is, however, the growing market in the Far East, which is the Near West from Vancouver. Moreover, New Zealand has passed a reciprocity act, giving Canadian products the preference over American, and probably this intercolonial preference will be extended to Australia in the near future. All these facts are claimed as favoring the programme of the Western Canada Pulp and Paper Company, which will be developed in harmony with home interests, as some of the leading firms of paper manufacturers in England are stated to be associated with it, and it has contracted with an English house for the sale of the major portion of its output." Reports from London state that a large part of the stock of £450,000 fell to the underwriters. The Victoria, B.C., Colonist hails the flotation as marking the turning point in the pulp and paper development of the Province. The concessions of pulp lands which formed the basis of the negotiations were acquired from the Dunsmuir Government in 1901, under contracts with Hon. W. C. Wells, chief commissioner, made with the Pacific Coast Power Co., Limited, and the Industrial Power Co., of British Columbia, Limited, and as the Wood Pulp Act, under which the concessionaires were operating had been repealed and no more pulp lands can be granted by the Government, the concessions have become the more valuable on that account. Among the local men interested are: H. B. Thomson, J. J. Shallcross, and Percy Criddle, in Victoria; P. G. Shallcross, Dr. R. E. McKechnie, and George Cowan in Vancouver; W. W. Beer, and J. Lang Stocks in Nelson, and G. F. Beer, in Toronto. The company has the lease of 163,000 acres of forest and 3,000 acres of freehold on the Powell river, extending from the sea to Powell lake. The water-power is estimated at 25,600-h.p. The estimate of cost is based on a yearly output of 18,000 tons of news and 7,000 tons of sulphite pulp. They wil require 18 months for construction.

Among the Quebec charters of the past month is the Union Screen Plate Company, of Canada, capital stock, $20,000, head office at Lennoxville. It will take over as a going concern the business now carried on at Lennoxville by the Union Screen Company, of Fitchburg, Mass., and he manufacturing and dealing in machinery of all kinds, and the carrying on of a general iron and brass foundry business. The charter members are: Emmons Crocker, manufacturer, of Fitchburg, Mass.; H. W. S. Downs, superintendent; George Henry, jeweler; Frank Gadette, nachinist, of Lennoxville, and Henry D. Lawrence, advocate, of Sherbrooke.

Work is progressing on what is popuarly known as the Backus development cheme, at Fort Frances, but the people of the town are concerned lest their inerests should be ignored. One point reates to the high water level to be pernitted, and the other to the proportion of power which is to be used on the Canadian ide. A deputation has been to Ottawa to nsist on an equality of power on the Canadian side, and to ask that the water evel be such as to safeguard the rights nd property of townspeople. Apparently he deputation has been satisfied on both oints. Of the 30,000-h.p. contemplated, ome is intended for a pulp mill.

G. A. F., in the World's Paper Trade Review, writes: "The Western Canada Pulp and Paper Co. Limited, of whose tock issue some particulars have been given, makes a good start. I have little doubt but that it will get all the money t wants readily, and, indeed, be coniderably over-subscribed. The peronnel of the board, embracing as it oes, two or three of the best-known names in the paper trade, is one in which nvestors will have confidence, while he fact that Edward Lloyd, Limited, are purchasers for five years of 10,400 tons per annum of the company's production s also a convincing and favorable feaure."

In the matter of the Mispec pulp mill, which was the subject of the negotiations eported last month between the corporation of St. John and Stetson, Cutler & Co., of Boston, terms have been arranged by which the firm will lease the mill from the city at $3,500 a year for five years with the option of terminating the lease on payment of a bonus of $3,000. The firm hope that the arrangement will endure for more than five years and give the following statement of their plans: "We have at Musquash 40,000 or 50,000 acres of timber and it is the finest wood for pulp that I have ever seen. About two-thirds of the tract was burned over, the tops of the trees being burned. We first intended to build a pulp mill there, but after the fire, conditions were changed. Then the Mispec mill became idle, and now, instead of building, we are willing to lease the Mispec mill. It is not desirably located, because there must be at least $2 a ton added to our expenses because of transportation to and from the mill, compared to what would be at a mill located in the city. Besides, there is the risk of loss in towing to the mill. However, we have at Musquash 16,000,000 feet of logs cut, we have standing enough to run the Mispec mill for ten or twenty years, and if we can furnish employment to 300 or 400 men, and can make a fair profit, it will certainly be good to have the mill employed. We certainly would not have in mind operating only two years, if matters are favorable, because no matter how short the time we will first have to spend a lot of money on the mill—$20,000 to $30,000. The building is pretty good, and was well thought out for the pulp business. But the boilers will have to be renewed, there will be needed more drying rolls, more screens, relining of digester, etc." Mr. Rowe, mechanical pulp expert from Lincoln, Me., is making plans for a large conveyor to be used for carrying wood and coal from barges to the mill. The wood brought in the barges will come from Musquash. Besides $3,000 for the conveyor, upwards of $20,000 will probably have to be expended on new boilers, screens, new rolls, etc. Up to the 1st of June, when possession passed to Stetson, Cutler & Co., George Cushing continued his experiment at the mill, in making brown paper.

The American Paper and Pulp Association has established permanent headquarters in New York, at 309 Broadway. C. W. Rantoul, late general manager of the Sturgeon Falls Pulp and Paper Co., but now in business as a paper merchant in New York, was one of the committee appointed to equip the offices.

THE BLEACHING OF WOOD PULP.

R. W. Sindall, F.C.S., and F. Heckford, in World's Paper Trade Review.

(Concluded.)

The matters to which we have specially directed the attention of our readers in preceding chapters will have suggested a large amount of work as to the laboratory investigations possible, and we invite correspondence on the subject in order to stimulate the spirit of enquiry amongst students who are in a position to look into this question.

Use of Residual Liquors.

In considering the factors which determine the consumption of bleach, and the color of the ultimate product, we must not overlook the influence of the products of the bleaching, which for the most part are in a soluble form mixed with the pulp. It is now generally recognized that the use of back liquors from the bleaching of fibre is not only of no value, but that in most cases it is positively detrimental.

Perhaps the idea of back liquors containing any available chlorine arose from the too frequent use of the Twaddell hydrometer, in conjunction with the occasional application of a specially prepared solution of starch paste and potassium iodide. The latter gave a decided blue color with traces of bleach, and then since the hydrometer might indicate one or two degrees Twaddell, the assumption of a valuable back liquor was inevitable. The limits of usefulness of the hydrometer as an indicator of chemical strength, as contrasted with mere density, are now well known, so that a better conception of the real condition of the back liquors has arisen.

The only circumstances under which residual liquors could be used with any advantage, occur in mills where water is scarce or expensive. In such cases the pulp from boiling operations might be washed with the residues, not so much for the purpose of using any traces of bleach, but more with a view of economizing washing waters.

Now these conditions do not happen with wood pulp, which is supposed to be a well washed material when supplied to the mill, but so far as the possibility of economy by using back liquor is concerned, the principles involved are of a similar character.

Composition of Residual Liquors.

The liquors left after the bleaching of wood pulp are of a complex composition. They contain soluble organic compounds, resinous matters, lime salts, and oxidized hypochlorites. Temperley gives the analysis of such a wood pulp liquor, as follows:

	Lbs per 1,000 Gals.
Mineral residues, chiefly calcium chloride	126.6
Organic residues, volatile on ignition	62.0
Total solids, dried at 100 degs. C.	188.6

The surface scum obtained from the liquor had the following composition:

	Lbs per 1,000 Gals.
Resinous matter	2.17
Lime	.80
Moisture	8.90
Fibre	2.40
Total	14.27

Now these compounds in solution in residual liquors are very unstable, and react easily with the hypochlorite of fresh bleaching powder, so that the employment of washings in conjunction with raw bleach solution must result in a greater consumption of powder per ton of air-dry pulp.

Temperley has shown this by some interesting experiments made in 1901, and we quote these as illustrating an important factor in economical bleaching. Definite quantities of bleach solution were added to known volumes of ordinary water, and similarly to equal volumes of a carefully filtered residual liquor from the bleaching of a sulphite pulp. The solutions were tested for a period of four hours at different temperatures, the results being very different in character.

Experiments with Ordinary Water.

Solution.	Temperature Used. Degs.	Bleaching Powder Used. Grains per gallon.	Bleaching Powder Used. Lbs. per 1,000 gallons.
Water ..	70	4.20	0.60
Water ..	90	4.90	0.70
Water ..	120	9.10	1.30

Experiments with Residual Liquors.

Solution.	Temperature Used. Degs.	Bleaching Powder Used. Grains per gallon.	Bleaching Powder Used. Lbs. per 1,000 gallons.
Liquor ..	70	194.20	27.70
Liquor ..	90	248.50	35.50
Liquor ..	120	784.00	112.00

The figures here show that residual liquors, even if practically colorless, are positively detrimental to efficient bleaching. Practical work demonstrates this, not only from the point of view of consumption, but what is often of greater importance, from the point of view of color. The same defect is found to a lesser degree in the use of unfiltered water, or water colored by vegetable matter in solution

Some interesting experiments can be readily carried out to ascertain the precise influence of soluble constituents in wood pulp. We have already given instances showing that for some pulps, the removal of such constituents by washing with water tends to shorten the time of bleaching and to improve the final color. By using the washing waters so obtained for breaking down small experimental quantities of pulp in further trials, the retarding influence of the soluble constituents can be accurately determined.

The unstable nature of solutions of bleaching powder, and the loss of available chlorine entailed when the liquor is not used under proper conditions is well known to most papermakers, although such depreciations in bleaching value are not always expressed in numerical terms. The following experiment will throw some light on the character and extent of the changes found in ordinary bleach liquor, when stored.

Some fresh bleaching powder was taken, and a solution made by extraction with distilled water, having a strength of 7 degs. Twaddell. Three lots of liquor were put aside under the following conditions:

A. Sample of clear liquor in stoppered bottle.

B. Sample of liquor in an open vessel, and left exposed, the crust of chalk which quickly formed on the surface being left undisturbed.

C. Sample of liquor in an open vessel, agitated twice a day, at 9 a.m. and 4 p.m.

These solutions were tested once a week, with a standard decinormal solution of arsenic.

Table Showing cc. of Arsenic Solution Required by 1 cc. of the Bleach Liquor.

Period.	A. Stoppered Bottle.	B. Open Vessel and Disturbed.	C. Open Vessel Agitated.
At start	7.05	7.05	7.05
After 1st week	6.90	6.90	3.90
" 2nd "	6.85	6.60	0.40
" 3rd "	6.8	4.0	0.27
" 4th "	6.8	2.7	0.15

In the case of the bleach liquor preserved in a bottle and kept away from contact with air, the loss of available chlorine is very slight. In the open vessel, where the formation of a crust has prevented continual contact with air, the reduction of strength is slight the first two weeks. Probably the rapid fall in the later weeks of the period may be due, in some measure, to the disturbance of the crust in removing samples for titration. In the case of the solution agitated each day the loss of strength is very rapid.

The precise value of these changes is readily determined by reference to the accompanying tables, in which the losses are set out.

Table Showing Available Chlorine in 100 cc. of the Bleach Solutions.

	A. Grams.	B. Grams.	C. Grams.
At start	2.50	2.50	2.50
After 1 week.	2.45	2.45	1.38
" 2 weeks	2.43	2.34	0.14
" 4 weeks	2.40	0.96	0.05

Expressing these results in a form more familiar to papermakers, that is, in terms of the weight of normal bleaching powder, we get the following:

Table Showing the Available Chlorine Expressed as Lbs. of Normal Bleaching Powder per 100 Gallons.

	A. Lbs.	B. Lbs.	C. Lbs.
At the start	70.5	70.5	70.5
After 1 week ...	69.0	69.0	39.0
" 2 weeks ..	68.5	66.0	4.0
" 4 weeks ...	68.0	27.0	1.5

The storage of the bleach liquor in the paper mill usually resembles the conditions of experiment B, and it will be noticed that the depreciation for the first week is very slight indeed.

The principal chemical change brought about by exposure to air is the disappearance of calcium hypochlorite and the increase in the percentage of calcium chloride, concurrent with the formation of a considerable amount of chalk, more particularly with the sample agitated each day.

The exact composition of the liquors at the end of each week was not determined. But the following details will be of interest in relation to experiments C and A.

Table Showing Chlorine in 100 cc. of Solution.

	At the start.		After 4 weeks.	
	A.	C.	A.	C.
Chlorine present as hypochlorite	2.50	2.50	2.40	0.05
Chlorine present as chloride ...	0.09	0.09	0.12	2.18

The complete analysis of the liquor at various stages can be made by determining the chlorine present as hypochlorite, chloride, and chlorate. This analysis is simple enough, and can be made readily by paper mill chemists who care to follow up the subject.

Some useful hints in this connection are given by Clayton Beadle in his "Chapters on Paper Making," and we strongly advise those of our readers who have found this series of articles of sufficient interest to carefully read Lecture III. Mr. Beadle brings out very clearly the effect of exposure to air as regards evaporation, and in relation to the storage says: "There is every reason to believe that there is considerable danger in half emptying a store tank, or drawing from a tank, the large bulk of which is allowed to remain at the bottom for the most part undisturbed."

It is clear that the subject of bleaching wood pulp has not yet been thoroughly and exhaustively studied. We have merely attempted in a short series of articles to suggest points which could be profitably studied by those who have the time and means at their disposal. The complexity of conditions, the varying quality of the wood pulp, create difficulties which can only be measured by adequate and systematic research. A proper system of routine records in mills using large quantities of wood pulp would throw considerable light upon a subject which at present receives very little attention along scientific lines, such records being often incomplete as to details which are necessary, but frequently overlooked.

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THERE'S A REASON !

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PULP AND PAPER MARKETS.

The Canadian pulp market for the past two weeks has been dull, not only because of the over-production in the United States, referred to in last issue, but because of the plethora of paper of some classes on our home market. Last month $12 to $13 was obtained for ground pulp at mill, but this month the first-named figure represents the maximum that is obtained, though no sales have been reported at less than $12. The pulp mills are none too busy just now. Chicago affords a large market for paper, being looked upon as a good dumping ground for job lots, and the strike there has adversely affected the paper trade of the Western States to a considerable extent, and has reacted on the Canadian pulp market, many of the western paper

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mills being good customers of Canadian pulp mills.

In the home paper market, there is a full supply, if not an overstock, of medium book papers, but mills on the higher grades of paper appear to be well employed.

Concerning the New York wood pulp market, the Paper Trade Journal says: There is little doing in ground wood. Because of the lateness of the season consumers who do happen to be under contract are buying but a little at a time, as they have an idea that pulp will be much cheaper. In the present ample supply of water and the quiet tone of the paper market, they think they see conditions that will force lower prices. The pulp manufacturers on the other side are predicting a dry summer, with high prices for pulp. In the chemical pulp market the higher grades of both foreign and domestic fibres are still holding quite firm, as there are as yet no surplus stocks at any of the mills. Bleached sulphite is stronger than the unbleached. Domestic unbleached sulphite is reported somewhat weaker because of the falling off in the demand. Soda pulp is not as strong as it has been. We quote: Sulphite, foreign, bleached, ex-dock, \$3.25 to \$3.35; unbleached, ex-dock, \$2.15 to \$2.50; sulphite, domestic, bleached, \$2.25 to \$2.75; unbleached, \$1.75 to \$2.10; soda, domestic, bleached, \$2.15 to \$2.25; soda, foreign, unbleached spruce, ex-dock, \$2.20 to \$2.40; bleached, ex-dock, \$2.90 to \$3.20.

The same authority quotes newspaper at \$2 to \$2.35, with "side runs" at \$1.85 to \$2. The production is in excess of the demand, and "all kinds of prices" are reported. Coated, book, tissues and wrappings are weak, and the situation in box boards grows worse; but there is a fair movement in manilas. Books and writings are the only satisfactory features of the United States market from the makers' standpoint.

Regarding the British market, the World's Paper Trade Review says: The market for both sulphite and soda continues firm. Contracts entered into are mostly for an extended period. There is not much movement in mechanical. The

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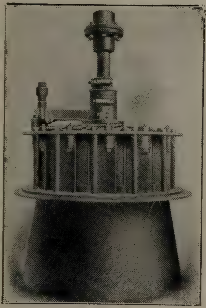

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Department of Lands, Mines and Fisheries

WOODS AND FORESTS.

QUEBEC, 13th MAY, 1905.

Notice is hereby given that, conformably to sections 1334, 1335 and 1336 of the consolidated statutes of the Province of Quebec, the timber limits hereinafter mentioned at their estimated area, more or less, and in their present state, will be offered for sale at public auction, in the Department of Lands, Mines and Fisheries, in this city, on THURSDAY, 22nd day of June next, at TEN o'clock, A. M.

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Block A.	Area Square Miles.
3rd range, 11	50
4th range, 10 to 14 each	50
“ 15, North half	25
“ 16, South half	25
“ 17 to 19, each	50
“ 20, North half	24¾
“ 27, South half	27½
5th range, 17 to 23, each	50
6th range, 10 N½	25
“ 11 N½	25
“ 13	50
“ 20 to 23, each	50
River du Lievre, N.W. branch, No 7	50
“ “ 8	50
“ “ 9	50
“ Middle branch, No. 7	40
“ “ 8	30
River Ottawa, 607	22

Saint Maurice

Manouan 1, north	50
“ 2, north	24
“ 3, north	35
“ 1, south	50
“ 2, south	50
“ 3, south	45
“ 8, south	30
“ 9, south	21
Upper Saint Maurice, 9 to 14 each	50
“ “ 15	60
“ “ 16	38
“ “ 17 to 27, each	50
“ “ 28	62
Upper Saint Maurice, 29	35
“ 30	30
“ 31 to 34, each	50
River Croche, A	40
“ B	34¾
“ C	50
“ D	37½
“ E	41
Rear River Trenche West	57
Lake a la Carpe	22

Saint Charles

River du Moulin, 4	12
Rivers aux Ecorces and au Canot	39
River aux Ecorces, 5	29
“ 6	41
River au Canot, 1	26
Grande Pikauba, 2	38
“ 3	38
River Saint Ann of Beaupre, 1	28
“ “ “ 2	27
“ “ “ 3	37

Lake Saint John West

River au Saumon, 1	46
“ “ 2	49

River au Saumon, 3	41½
" " 4	68
" " 5	91⅓
Township Dablon, ranges 2 and 3	1¾
Township Ross, No. 1	8½
" No. 4	15½
River Ouiatchouaniche, No. 1	11

Lake Saint Jean East

Township Kenogami, No. 2	1½

Saguenay

River Malbaie, 10	60
" 11	57
" 12	54
" 17	37
Bergeronnes, 1 East	25
River Sainte Marguerite, 87	24¼
River Manicouagan, 8 to 16, each	50
River Magpie, A	52
" B	42
River Natashquan, 1 to 4, each	50
River Piastre Bay, 1 to 8, each	42

Rimouski East

River Cap-Chat, 1	47½
" 2	45
" 6	45
River Matane, A	48

Metapedia

Tph. Cabot No. 2	11

Granville

Township Parke, No. 4	4½

Gaspe West

River Sainte Anne, D	48
" E	43¼

Gaspe East

Grand River Pabos, T	39

Gaspe Centre

Sydenham West	20
River York, A	46½
" B	52¾
" C	58¼
" D	58
" E	38¾
" F	33¾
" G	28
" H	27
" I	38
" J	23½
" K	40
River Saint John, N	37½
" O	42
" P	33
" Q	28½

Conditions of Sale.

No limit will be adjudged at less than the minimum price fixed by the department.

The limits will be adjudged to the highest bidder on payment of the purchase price, in cash or by cheque accepted by a duly incorporated bank. Failing payment they will be immediately reoffered for sale.

The annual ground rent of three dollars per mile, with fire tax, is also payable immediately.

Those timber limits, when adjudged, will be subject to the provisions of all timber regulations now in force or which may be enacted hereafter.

Plans of limits offered for sale are opened for inspection in the Department of Lands, Mines and Fisheries, in this city, and at the office of the Crown Lands and timber agents in the different agencies in which said limits are situated, up to the day of sale.

N.B.—No account for publication of this notice will be recognized, if such publication has not been expressly authorized by the Department.

ADELARD TURGEON,
Minister of Lands, Mines and Fisheries.

---

absence of business has induced a few sellers to lower their quotations, but on the whole Scandinavian mills maintain a firm attitude. The esparto market is little altered in tone or price, but one or two important transactions for distant shipment have been negotiated. Early delivery finds no sale, consumers being well stocked. Prices quoted for mechanical, 50 per cent., moist, prompt delivery, are £2 5s. to £2 7s. 6d.; for delivery, May to December, £2 to £2 5s.; dry, prompt delivery, £5 5s. to £5 10s.

CHEMICAL MARKETS.

London reports show that British trade is quiet. Quotations :—Ammonia alkali, 58 per cent., £4 12s. 6d.; caustic

THE PUSEY & JONES COMPANY

WILMINGTON, DELAWARE, U.S.A.

Machinery for Paper Mills and Pulp Mills

REPRESENTED BY

THE WM. HAMILTON MFG. CO., LTD.,

PETERBOROUGH, ONTARIO,

Who are prepared to Build in Canada the Inventions
Patented in Canada by THOMAS H. SAVERY,

Under Numbers 68,093, 71,746, 72,118, 77,818, 89,114, 89,115;

J. H. GATELY'S Guard-Board Canadian Patent 74,735,

Ejector Vacuum Pumps — Bertrams Limited — Patent.

DR. C. WURSTER'S Patented

Pulping Machines & Kneaders

NEARLY 150 AT WORK.

LARGE PATTERN — Four Sizes.

PULPING-UP 3, 6 and 9 and 12 tons of Dry Papers or Pulp in 24 hours.

POWER—5 h.p., 8 h.p., 12 h.p. and 15 h.p.

SMALLER PATTERN—For Sorted Papers only.

PULPING-UP 2 to 3 tons of Dry Paper in 24 hours. 2 to 4 h.p. Built in Iron.

For Better Quality Papers, Trough and Propellers made of Brass.

Special Machines for Unsorted Paper.

These Machines do not Grind, Cut-up, or Wet the Fibres, and as the State of Beating and Refining is Unaltered, neither Color nor Sizing being Affected, and Impurities not touched, "BROKE" can be Re-used for the Same Quality of Paper again.

FOR PARTICULARS APPLY TO

DR. C. WURSTER, 29 Abbey Road, St. John's Wood, LONDON, N. W.

ENGLAND.

soda, 76-77 per cent., £10 10s.; bleaching powder, soft wood, £4 7s. 6d. to £4 12s. 6d.; Soda crystals, £3 to £3 5s.; recovered sulphur, from £5 7s. 6d.; and salt cake, £1 17s. 6d.

In the New York market prices for domestic brimstone are unchanged, on a basis of $21 for New York; $21.25 for Baltimore and Philadelphia, and $21.10 for New York and Boston. Some contracts for bleaching powder are being made on a basis of 1¼c. Some sales of domestic high test caustic soda are reported on a basis of 1.75 to 1.80c. Domestic china clays are quiet at $8, foreign unchanged at $11.

RAG AND PAPER STOCK MARKET.

Montreal, 14th June, 1905.

There is not much change to note during the last month. The lower qualities of cotton rags are a little easier, due partly to the larger collections that are marketed in spring. New cotton cuttings of all grades continue scarce and dear.

All grades of waste paper are lower, and common waste for the present is hard to dispose of. Ledger stock and shavings are holding their price, and stocks of these are small. There is very little doing in bagging, most of the enquiries coming from United States mills. Manilla rope is in limited supply, and the price is firm.

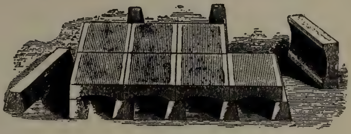
Since 1st May large quantities of roofing paper stock have come from

For Sale

Paper Machines,
Steam Engines,
Boilers,
Fourdriniers,
Press Rolls,
Dryers, Calenders,
Pumps, Heaters.

F. H. DAVIS & CO.,
161 Devonshire St.,
BOSTON, - - MASS.

Drainer Stones



Save your stock and temper by using the Klary & Snell Patent Drainer Stones. They are the only drainers that give satisfaction.

Send for Sample and Price List.

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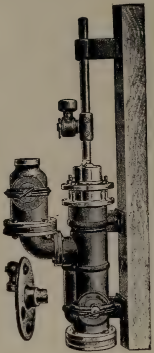
ATTERBURY BROTHERS, Incorporated.
Importers and Exporters.
Wood Pulp, FOREIGN AND DOMESTIC Rags AND Paper Stock
140 Nassau Street, New York City.
Cable address "AFFECTIVE," New York.

Europe, and roofing mills for the present are well supplied.

No. 1 white shirt cuttings	$5.25 to	$5.75
Light print cuttings	4.00 to	4.50
Unbleached cuttings	4.50 to	5.00
White shoe clips	4.00 to	4.50
Colored shoe clips	2.75 to	3.25
Domestic white cottons..	2.25 to	2.50
Blues and thirds cottons.	1.40 to	1.50
Roofing stock	.60 to	.70
Waste papers	.35 to	.40
Manilla rope	2.00 to	2.12½

The World's Paper Trade Review reports: The British market for rags keeps firm. The American demand, however, is less than it was, and this



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This pump is made in three sizes, 5″, 6″ and 8″.

The valves are made so as to be easily and cheaply replaced and can be got at without using wrench.

We also make boiler feed and other pumps.

Particulars and references on request.

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Heavy Duty Pulp and Baling Presses.

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TORONTO, Canada.

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ASSOCIATED INDUSTRIAL ENGINEERS AND CHEMISTS
JOSEPH H. WALLACE, C.E., M.Am. Soc. C.E., M Can. Soc. C.E. | A. U. JAASTAD, M.E., Steam Engineer. | VIGGO DREWSEN, Ph. D., Industrial Chemist.
Pulp and Paper Mills, Power Developments, Reports, Consultation.
OFFICES AND LABORATORIES—Temple Court Bldg., New York.

BRUNNER MOND & CO., Limited
NORTHWICH, ENG.
LARGEST ALKALI MANUFACTURERS IN THE WORLD.
Soda Ash 58 per cent.
Bleaching Powder 35-38 per cent.
SOLE AGENTS IN CANADA
Winn & Holland, - - Montreal

may help to increase quantities. The curious feature of the market is that the great reduction in the price of raw cotton has had no effect upon White Cuttings. In foreign rags, according to our German correspondent, New White Cuttings are scarce and high in price. Best cuttings selling at £28 per ton; white linens and cottons move well; colored rags are not in so good demand, whilst bagging shows an upward tendency on account of the high prices ruling for jute butts.

* * *

—Some time ago, Watertown gentlemen, interested in the paper business, were approached on the subject of establishing a large wood-grinding plant at Massena, to be driven by electrical power generated at the plant of the St. Lawrence River Power Company. George C. Sher-

JAMES KENYON & SON,
Telegraphic Address "KENYON-BURY" DERBY STREET MILLS Telegraphic Address "KENYON-BURY
BURY, - LANCASHIRE
Manufacturers of FELTS For Paper Makers.
Couch Roll Covers, Wet and Dry Felts of all kinds, including
Patent Cotton Dry Felts
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Special attention paid to felts for fast running news machines

THE UNION SULPHUR COMPANY
PRODUCERS OF THE HIGHEST GRADE BRIMSTONE ON THE MARKET.
AVERAGE ANALYSIS: Sulphur, . . . 99.9 per cent. Organic matter, .1 per cent.
Absolutely free from Arsenic, Selenium or Tellurium.
The Largest Sulphur Mine in the World.
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Main Offices, - - - - - 82 Beaver Street, New York.

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GOTHENBURG (Sweden)	Lilla Kyrkogatan No. 20.
MANCHESTER	Guardian Buildings (opposite Exchange).
LONDON	77a Queen Victoria Street, E.C.
PARIS	Rue de Londres No. 29.
ANGOULEME (France)	43 Rue Louis Desbrandes.
LYONS	54, Cours Gambetta.
MILAN	24 Via Solferino
TOLOSA (Spain)	18 Calle San Francisco.
NEW YORK	99 Nassau Street.
ST. PETERSBURG	Little Podjascheskaja House, 4, Qu. 16.

Telegraphic Address:

"WERTHEIMO, HAMBURG."

man, D. M. Anderson, J. B. and B. L. Taylor, and others, have visited Massena for the purpose of investigating the matter. They found that an abundance of power for operating a grinding plant could be secured, and that as a receiving point for pulp-wood shipped by water from Canada, the location has every advantage, as timber could be unloaded from boats at the mill. Some of the gentlemen in the party looked upon Massena as an ideal place for working up some of the product of Canadian forests.—Paper Trade Journal.

* * *

—Reports on the 10th inst. state that serious forest fires were raging in the Mirimichi region, N.B., near the towns of Rogersville, Blackville, and Barnaby river. Crown lands and the Alex. Gibson property were attacked. Two Gibson mills at Blackville and a mill at Doaktown were closed and the crews sent out to fight the fire.

SPECIAL:

Cyclone Separators for Barkers.
Extra Heavy Steel Plate
Exhaust Fans for Pulp Mills.
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Blower System.
Mechanical
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& SHELDON,
GALT, = ONTARIO.
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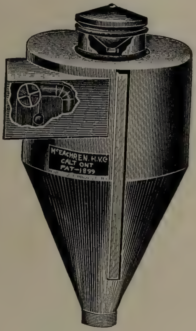

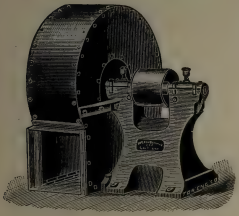

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BRAND
CHINA CLAYS
REGISTERED.

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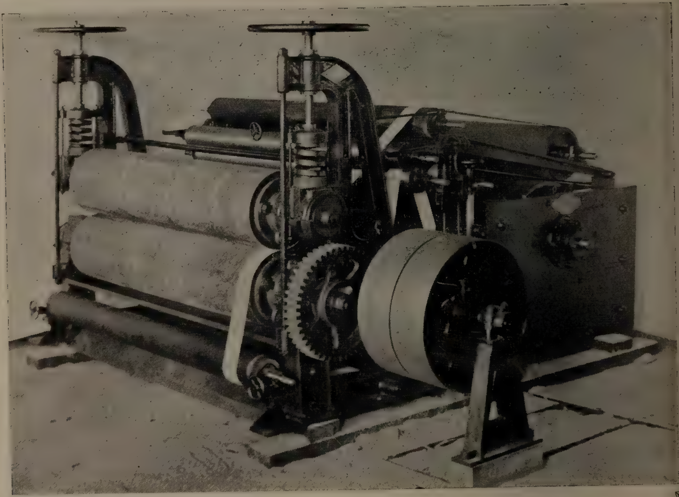
L. G. V. is a natural Pure White, free from any artificial tinting.
For Coating, Bleaching or Fine Papers it is unsurpassed.

CARRIER, LAINE & COMPANY,

LEVIS, = = QUE.



Carrier, Laine & Co., Wet Machine.

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Paper Machinery,
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Mills Built and Equipped with Power Plant.

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Paper Mill Machinery.

Guaranteed the most serviceable and efficient of any built.

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Tissue Paper Machines a Specialty.

BELOIT IRON WORKS,
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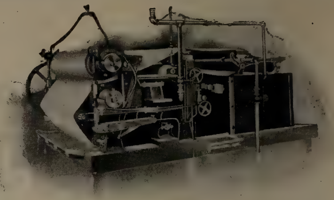
¶ We make a specialty of designing and equipping Pulp Mills complete with power.



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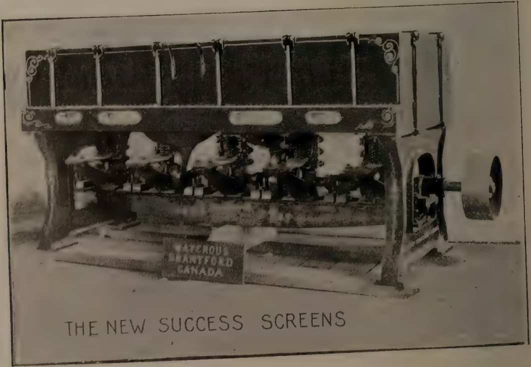
BRANTFORD, - CANADA.



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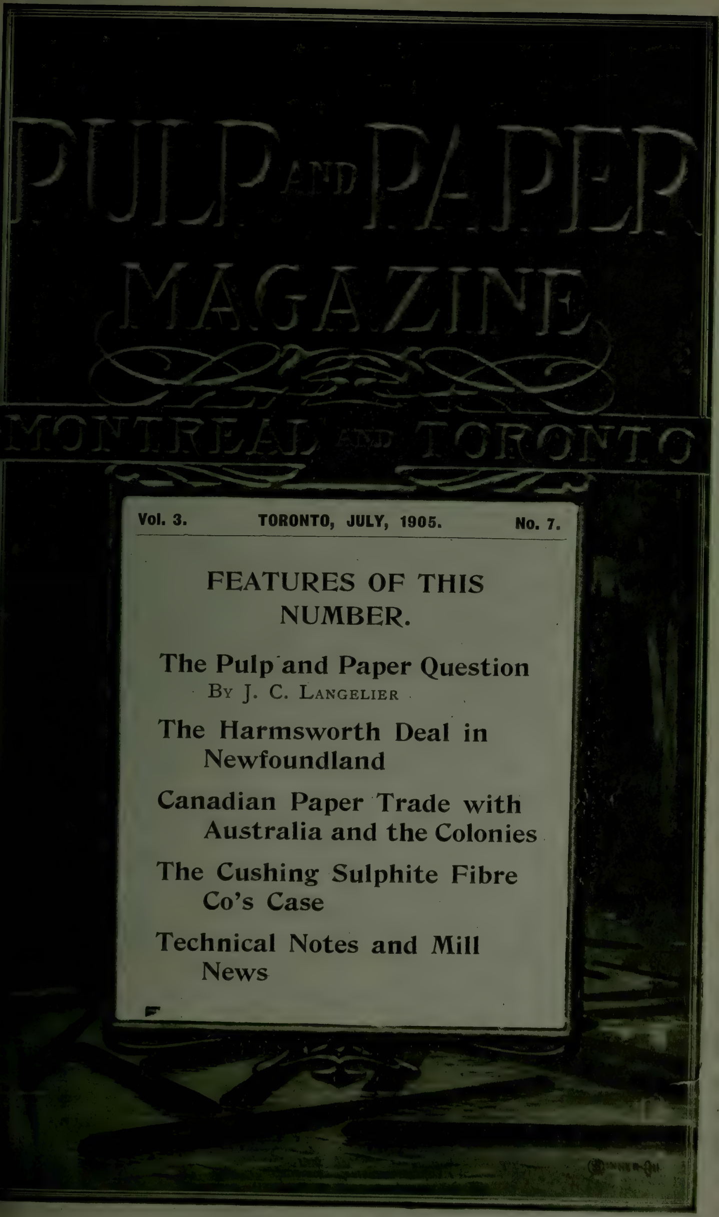

PULP AND PAPER MAGAZINE

MONTREAL AND TORONTO

Vol. 3. TORONTO, JULY, 1905. No. 7.

FEATURES OF THIS NUMBER.

The Pulp and Paper Question
By J. C. Langelier

The Harmsworth Deal in Newfoundland

Canadian Paper Trade with Australia and the Colonies

The Cushing Sulphite Fibre Co's Case

Technical Notes and Mill News

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INDEX TO ADVERTISEMENTS.

Atterbury Bros. 43
Beloit Iron Works 49
Benson & Co., W. T 10
Bentley & Jackson 4
Bertram's, Limited 6
Black-Clawson Co., The 7
Bowater & Sons, W. V 52
Bredt & Co., F. 10
Brunner, Mond & Co., Limited 44
Canada Paper Co. 51
Canadian Fairbanks Co , Limited, The 37
Canadian Rubber Co. of Montreal 8
Carrier, Laine & Co. 48
Castle, Gottheil & Overton 9
Cheney-Bigelow Wire Works 38
Christie, J 52
Christie, Limited, George 3
Cousland & Co., A 10
Davis & Co., F. H. 43
Dean & Son, Limited 41
Eastwood Wire Mfg. Co 2
Emerson Mfg. Co 37
Freese, Jean 3
Hamilton Mfg. Co., Wm 39
Hardy, George F. 9
Hawksworth & Sons Co., Limited, Alfred 12
Hay Knife Co., Limited, Peter 38
Hough, R. 52
Huyck & Sons, F C 5
International Pulp Co. 9
Jenckes Machine Co., Limited 12 & 50
Johnson & Sons, Limited, C. H 6
Kenyon & Son, James 45
Klipstein & Co., A 11
Kimball, Herbert S. 9
Knight & Co., John 47
Lea & Coffiin, and H. S. Ferguson 9
Little & Walker 9
McDougall Caledonian Iron Works, The John 41
McOuat & Son, T. 44
Paton, Thomas L 3
Perrin & Co., Ltd., Wm. R 44
Porritt & Sons, Joseph 10
Porritt & Sons, Limited, Samuel 52
Porritt Bror. & Austin 6
Pringle & Son, T. 9
Pulp & Paper Trading Co., The 38
Pusey & Jones Co 42
Quebec & Lake St. John Ry. 9
Seymour & Guest 9
Sheldon & Sheldon 47
Smith Co., S. Morgan 51
Snell, Co., Samuel 43
Sullivan & Co., C. F. 10
Union Screen Plate Co 3
Union Sulphur Co., The 45
Vogel, C. H 9
Wallace-Jaastad-Drewson 44
Waterous Engine Works Co., Ltd 50
Wertheim & Co., A 46
Whittaker, Richard 11
Wilson, Paterson & Co. 12
Winn & Holland 44
Wurster, Dr. C. 42
Young, J. S 51

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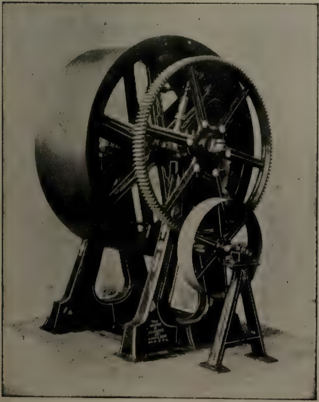

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—In analyzing paper for sulphides, the following method is claimed by A. Eck to be a rapid, easy and extremely sensitive one: Zinc and water well acidulated with HCI, all pure, are placed in a flask with two tubulures. Then a tapered tube is adjusted to one tubulure and a funnel tube to the other. The material supposed to contain sulphide is then introduced into the flask, and a little Berzelius cornet steeped in subacetate of lead is fixed on the end of the tapered tube. Black spots of lead sulphide will then appear, more or less rapidly, according to the amount of sulphide, and sensitiveness is such that it is possible to detect the presence of 1-500,000th of sulphide.

* * *

—An attractive little pamphlet has been issued by the Quebec and Lake St. John Railway Company, describing an interesting district between the Riviere Jeannette and the River St. Maurice at La Tuque Falls, which is now being opened up by a branch line of railway forty miles long. The importance attached to this comparatively short line of railway is due principally to the fact that it will hasten by about two years the completion of the Grand Trunk Pacific Railway, by permitting the company to commence operations in the heart of the Province and work in both directions from the St. Maurice river, as well as towards it. Additional interest attaches to this branch from the fact that it is opening up a vast amount of valuable forest land and extensive water-falls, that at La Tuque alone, when harnessed by electricity, being capable of furnishing a force of 90,000-h.p., and consequently destined, in the near future, to build up a large town in the vicinity, just as has happened, under similar conditions at both Grand Mere and Shawinigan. After the completion of the line this year, it is intended to place a tourist steamer on the St. Maurice, portions of which are declared to rival in grandeur the far-famed Saguenay.

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OF CANADA

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CANADIAN FORESTRY ASSOCIATION.

It was intended that a special meeting of the Canadian Forestry Association should be held in Ottawa this summer, but the protracted session of Parliament appears to have prevented Sir Wilfrid Laurier from carrying out at so early a date the invitation he extended to the Association. At a meeting of the Board of Directors of the Association held a few days ago it was decided to recommend the holding of the next convention on the 10th, 11th and 12th of January next in Ottawa. This is subject to the approval of Sir Wilfrid Laurier. The organization is not yet completed, and will also have to be submitted for approval, but we are in a position to say that His Excellency the Governor-General will be Honorary President, that Sir Wilfrid will be President, that Mr. R. L. Borden and Sir Henri Joly will be Vice-Presidents. In accepting the Honorary Presidency His Excellency expressed his great interest in the convention and his best wishes for its success. It is expected that the Provincial Governments will have a better representation at this convention than at any previous one.

CANADIAN PAPER IN AUSTRALIA

J. S. Larke, one of the commercial agents of the Canadian Government in Australia, has returned for a short time to Canada. In an interview with the Victoria, B.C., Colonist Mr. Larke spoke encouragingly of the prospects of Canadian paper in the Australian Commonwealth. He said:

"Canada sells considerable paper in Australia, and British Columbia should manufacture and sell practically the whole of the newspaper used in Australia. The pulp is in British Columbia, the water power is here, and the clean water. If capitalists established pulp mills they could sell considerable of their output in Australia. It is difficult to get the records of this trade. If one looks at the figures of the Australian reports it is shown that paper valued at £5,000 was shipped into Australia from Canada in 1904; but if the Canadian reports are consulted, it is shown that the trade with Australia for paper in that year amounted to £78,000. Much of the paper was sold through United States and British houses, as is much of the lumber from British Columbia, which is sold in Australia by San Francisco firms. Therefore, he couldn't say how large was the trade, but knew it was ten times larger than when he went to Australia."

Mr. Larke, in the course of the interview gave some wholesale advice to Canadian exporters and those seeking new trade there. They should answer enquiries promptly, remembering that it takes a letter a long time to reach the Antipodes; they should try to supply what the market wants, and they should be satisfied with small orders on the start, and pack goods well. As to small initial orders the Australian would like to do business with the Canadian, but he usually has to pay for goods long before he receives them, and he wants to be assured that he is getting what he pays for, and that the goods will be equal to sample. Not much headway can be made by sending circulars; it is better to send a traveller with samples. He thinks it well worth while for Canadians to take trouble in properly cultivating the Australian market, for he considers that prospectively Australia is the market of the world. The East needs the West there, and Canadians are under a false impression as to the importance of that market. A preferential tariff would help trade between the two countries greatly. Mr. Larke's recommendation should be studied by Canadian paper makers for more reasons than one. The day is coming when foreign trade will be the chief consideration of our pulp and paper manufacturers, and this trade, with that of New Zealand, and South Africa, will afford one of the most substantial fields for the export of our pulp and paper products. This must be apparent when we realize that, generally speaking, both South Africa and Australasia are deficient in permanent water powers and in the raw material for wood-pulp paper. They will therefore of necessity be importers rather than extensive manufacturers of paper and pulp, and as those colonies will be the home of millions of reading people, the market will be a prize. The United States paper makers already perceive this, and are making efforts at considerable sacrifice to capture those markets is evident from the facts recently published in this magazine. The chief prizes should go to Canadians, however, because it seems tolerably certain that preferential tariffs will be a permanent policy with the Colonial Governments, and moreover, the elements combine to make Canada eventually a cheaper place to manufacture in than the United States. It is not alone the United States that is assiduously cultivating the paper trade of Australia, but Scandinavian and German manufacturers are sending trial shipments of an attractive kind. These trial lots are said to be superior to anything which the same manufacturers are furnishing to the European market, so that the Scandinavian and German firms evidently know how to put the best foot foremost in getting into the Australian trade.

Pulp & Paper Currency

At an adjourned meeting of the Flax Pulp, Limited, in London last month the recent administration of the company's affairs came in for sharp criticism. This company is an offshoot of the French-Hickman Flax Fibre Co., which sold its patents for the United States and Canada to the By-Products Paper Co., whose establishment at Niagara Falls, N.Y., has been referred to in this magazine. In the interval between the first meeting in London to consider the company's affairs, and the adjourned meeting, the failure of the By-Products Co. took place, but of this event, it is stated, no report was made. One explanation of the difficulties of these concerns is that some parts of the process were known only to the late Mr. Day, who took ill and died of typhoid fever just before the plant was ready to operate. Notwithstanding these troubles the latest reports from the English end of the concern indicate that there is a good prospect of the works being put into shape and the process made a commercial success. The Flax Pulp Co.'s works at Runcorn were, after many delays, started last February, and he products are said to have brought many enquiries and to have been favorably reported on by the trade. A process which can turn flax straw directly into paper will have practical nterest for Canadians because such paper will fill a special niche of its own n the paper trade where wood-pulp paper cannot be used, and the immense quantities of flax straw which are now burnt up in Manitoba and the Northwest by farmers who grow flax for seed and linseed oil manufacturing could then be turned to account. The prairies cannot yet hope to become the seat of a wood-pulp paper industry, but they have the material for a flax paper industry which would well supplement the wood paper manufacturing of the East. However, since large sums have been spent on the experiments of the plant at Niagara without result so far, Canadian investors will prefer to await the proof of commercial success before they invest much capital in this field.

* * *

Of interest to pulp and paper manufacturies is the change that has taken place this month in the Government of Quebec. The Department of Lands, Mines and Fisheries has been divided into two departments. The administration of crown lands and forests has been taken by Hon. A. Turgeon, whose new title is "Minister of Lands and Forests," while the control of mining matters and fisheries has been transferred to a new portfolio taken by Hon. J. B. Prevost under the title of "Minister of Colonization, Mines and Fisheries." Since the development of the pulp trade the work of the crown lands has become the most important branch of the public service of Quebec, and it is well to have a minister of first rate ability to devote his whole mind to the problems that are arising as the country is being cleared of its forests. Whether colonization work should not be under the control of a minister of crown lands—since the operations of the settler are so constantly entangled with the business of the timber limit holder—is a question which will no doubt be decided by the experience of the new regime.

* * *

Considering that enormous areas of peat bog exist in Canada, especially in the northern regions of Ontario, Quebec and Manitoba, the two experiments now afoot in Canada for the manufacture of paper boards from peat will be studied with interest. Some months ago we gave an account of a process carried out at Celbridge, Ireland, by W. M. Callender, whose company had some financial difficulties resulting in suspension of the work. Since then, however, Mr. Callender appears to have reorganized the company, and is selling his output very successfully. S. Irwin & Sons, of Dublin, recently wrote to the Westminster Gazette of London that the efforts of the past twenty years to make paper from peat in Ireland had been invariable failures, and that peat could not compete with wood pulp. Mr. Callender takes up the challenge in behalf of peat, and replies in the Gazette as follows: "My attention has been called to an article in your paper on 'Irish Peat Paper,' in which you quoted a letter from Messrs. Irwin, the rag and waste-paper dealers of Dublin. This letter criticizes the statement that my paper is being made from peat, and further states that the said rags and waste-paper dealers have been experimenting for twenty years in England and Ireland, endeavoring to use peat as a raw material for paper, and have altogether failed in so doing, and they further, naturally, advise everyone that rags and waste-paper are the best possible raw materials. My company's mill at Celbridge is making wrapping paper from peat, and is selling more than the total production of all the other wrapping-paper mills in Ireland combined, whether made from rags, waste-paper or what not. For the last two years I have been endeavoring to develop an Irish industry at Celbridge, and have spent there about £15,000, and my company is now employing between forty and sixty hands. Our process has been inspected and reported upon favorably by practically all the leading paper experts in Europe and America. Some months ago we asked Craig, Gardner & Co., the eminent accountants, to send someone to our mill to report on our process, and their report states 'of the ingredients about 66 per cent. is peat.'"

⁂

It may prove a fortunate coincidence that just as Newfoundland is starting on its career as a pulp-manufacturing country, a large bed of china clay, said to be well suited for paper manufacturing, has been discovered on the west coast of the Island. The St. John's, Nfld., Herald reports that nine barrels of it have been shipped to New York to be tested. As freight is such a large element in the cost of china clay (about one-half in this country), any large beds of this material either in Canada or Newfoundland at accessible points will be important to the paper trade.

⁂

It will interest Canadian pulp manufacturers to know that at the recent annual meeting of the Paper Makers' Association of France, held in Paris, the delegates expressed themselves unanimously in favor of the abolition of import duties on wood pulp. As France imports large quantities of pulp, chiefly hitherto from Scandinavia and Germany, and as shipping facilities from points in the Province of Quebec to French ports are good, there should be a large opening for trade there. The convention also favored the repeal of the arbitrary distinction made between dry and moist mechanical pulps. It would no doubt be in the interest of paper manufacturing countries, as well as of pulp-exporting countries, to arrive at an international agreement on this subject.

The budget speech of the Canadian Finance Minister did not contain any announcements directly affecting the pulp and paper trades, but these interests, along with the textile trades, will be looked into no doubt by the tariff commission, which is to be composed of the Finance Minister, the Minister of Customs, and the Minister of Trade and Commerce, and which is to begin its work in September. The budget speech contained the interesting announcement that the new tariff, which will be the outcome of the work of the commission, will be a three-storied tariff. It will provide for a maximum tariff, intended for such countries as Germany which discriminate against Canada, a general tariff, and then a minimum or preferential tariff for the Mother Country and the British colonies, which give a preference in favor of Canada. Just in which story the United States will enter is not certain, but in view of the obstacles which that country has thrown against importations from Canada, especially in the pulp and paper trades, they can hardly expect to get in on the ground floor, as our neighbors are wont to say. Whether the export of pulp wood will be prohibited, or an export duty imposed or a countervailing bounty be given on exports of pulp and paper, as has been the policy in dealing with the iron and steel and lead trades, no one can say. It is indeed hardly likely that the commissioners themselves, much less the members of the ruling party, have come to a conclusion in advance of the investigation.

* * *

Speaking of developments in Newfoundland, Sir William MacGregor, the Governor, is organizing an enterprise which will reflect highly upon his regime, and which is almost certain to have immediate, as well as remote, results on the development of the colony. This is an expedition to Labrador, which, as our readers know, is a strip of the "continent to which we belong," but is under the jurisdiction of Newfoundland. Sir William will incidentally observe the eclipse of the sun in August, but his main object will be to make meteorological, tidal and hydrographic surveys with a view to the better charting of the coasts up to Cape Chidley, and he will have a search made for minerals and botanical and geological specimens. Work will be commenced at Chateau Bay, the most easterly point of the Canadian telegraph system, and he will be accompanied by Commodore Paget, with the flagship Scylla; Mr. Clemenson, the astronomer, from Brisbane; Capt. Elgee, an authority on ethnology, and Henry Reeve, of the Colonial Office, a former director of works in several colonies. The forests, as well as the minerals, will no doubt have attention from the expedition, whose report will be of great value to the colony and the Empire.

* * *

If war should come between Norway and Sweden there would be a tremendous disturbance in the pulp and paper trade, for those countries in normal times supply the bulk of importations of Great Britain and European countries in both pulp and paper. Such an event would cause heavy demands on the pulp production of Canada, but Canadian manufacturers would not desire a boom in their trade at the price of human blood and at the cost of mourning in thousands of homes. Perhaps out of the present friction good may come without bloodshed, for the separation of the two countries for all purposes of self government may be followed by their re-union along with Denmark in a federation of the three Scandinavian nations.

*

In another part of this issue will be found the first instalment of a comprehensive review by J. C. Langelier of the situation in the pulp and paper trades of Canada. Mr. Langelier, as chief of the forest rangers of Quebec, has travelled extensively over the Province, and has studied the question from almost every aspect. Though they may not agree with him in our conclusions, our readers will find in Mr. Langelier's review, in this and succeeding issues, a great mass of valuable information that will help to form a public opinion on a subject the most important of all those affecting the material welfare of Canada.

The Pulp and Paper Question

By J. C. Langelier, Chief of Forest Rangers of Quebec.

Formerly paper was made of rags, cotton waste and straw. But the secession war in the United States hastened the revolution which was destined to take place in the manufacture of this article. In order to follow the ups and downs of the great national drama, the American people required from the press complete and minute reports of events upon the battlefields. The size of newspapers was necessarily enlarged; the small ones in quarter sheets were succeeded by large journals, which were established in all centres of sufficient importance. Publications increased in the same ratio, and soon paper manufacturers found it impossible to supply the ever increasing demand made on them by the publishers of newspapers and books. Up to that period rags, cotton waste and straw had been employed exclusively in the manufacture of newspaper. The increased demand created by the extraordinary enlargement in the size and number of papers, as well as in the price of raw material used by paper manufacturers, stimulated the genius of inventors, causing the adoption of various substitutes for rags and other similar materials in the manufacture of paper. They first endeavored to utilize vegetable fibres such as straw and various grasses, especially esparto, which they treated by the soda process. This new process, perfected in Germany by the chemist Mitscherlich, was finally adapted to wood, causing a radical change in the manufacture of paper, the cost of which was considerably reduced. The wood paper was invented. Still, owing to its chemical preparation, this paper was of too costly a nature to permit of the publication of newspapers and books in the full degree of development which they were capable of attaining. Further research led to the discovery of ground or mechanical pulp, one of the greatest discoveries of the age, by which paper is manufactured exclusively from wood. Now nearly all printing paper and by far the largest portion of the writing paper, are made of wood pulp—chemical and mechanical or ground. Thanks to these discoveries the price of paper has fallen considerably; thus, newspaper which sold in 1860 at from fifteen to sixteen cents per pound now sells for two and three cents. It was by means of those discoveries and the use of wood as raw material that the cheap journal and the cheap book were made possible, and the printing press was enabled to multiply its production and has attained in the last thirty years such a wonderful development. The use of rags and other expensive material has, therefore, been abandoned; the paper industry has been radically transformed and to-day it is practically impossible to return to the old system. Even in countries where there is no wood suitable for pulp-mak ing, paper manufacturers are compelled to import this product or to shut down their mills. The wood paper has come to stay, it has taken definite possession of the ground, it dominates all the markets in the world, and no sensible man would even think of any practical substitute for wood in the manufacture of good, cheap paper for newspapers and books.

Nearly all the kinds of wood can be manufactured into pulp as all contain fibre, but the most suitable for this purpose are black and white spruce, balsam, hemlock, poplars and pine. Pine is used only in the manufacture of chemical pulp. It gives a good pulp, but the process required to bleach it is rather expensive. Moreover, this wood is too high priced to be used profitably in the manufacture of paper. In the New England States and in the State of New York they employ hardwoods, such as bass, beech and white birch in the manufacture of soda pulp, with poplar and aspen. But spruce and balsam are by far the best woods to make pulp and paper on account of the special quality of their fibres, and also on account of their color. These comparatively soft woods are very easily ground, and with the low rate of the present market for paper, pulp manufacturers require wood of small value, and hence spruce and balsam are the most profitable and, in fact, indispensable in the business. Therefore the countries possessing large supplies of spruce and balsam have the first and best foundation for a large industry in the manufacture of pulp and paper.

Chemical pulp can be manufactured almost in any place, as it requires comparatively little motive power; but it is not so with regard to ground wood; it requires abundant and permanent power, which cannot be supplied by steam. In Canada, and particularly in the Province of Quebec and in New Ontario, we have by the score large water powers which can supply force to grind pulp for the whole world and over.

Therefore, we possess in limitless quantity the two fundamental elements of the pulp and paper industry—the raw material of the very best quality and the power. With those two essential requirements at our disposal we should manufacture pulp and paper for all the countries which do not possess them. Still, with those advantages at our hands we hardly manufacture half of the paper consumed in our country; we export our pulp into the United States, where it is manufactured into paper and then sent back to us by the American manufacturers in the form of finished articles. Worse than that, we ship to our neighbors in the raw the wood which we should ourselves manufacture into pulp and paper, and export as a finished article, thereby losing millions of dollars in wages which should be earned by our own workmen.

In this respect we are victims of the American paper trusts, which have succeeded in arranging the United States tariff so as to suit their own exclusive purposes. Nelson Dingley, who engineered that tariff was a Maine man; Senator Frye, who maintains that tariff as regards pulp and paper, is another Maine man; the President of the International Paper Company, which manages the political influence to maintain the Dingley tariff, although a Canadian by birth, is a Maine man by interest, being the proprietor of the Rumford Falls mills and four others in the State (besides many mills in other states), and of the Portland and Rumford Falls Railway. Through the efforts and energy of this gentleman and his associates the American people is compelled to pay 15 to 20 per cent. more for its paper, and the Canadians are reduced to the degrading condition of slaves, acting and proceeding in that great industry only at the bidding of a handful of American monopolists.

If our cousins of the United States are satisfied with this state of affairs the Canadians are not, and the time has come when we should put an end to it.

The Remedy.

The remedy to this evil is quite simple: prohibit the exportation of pulpwood, or put an export duty of four or five dollars per cord on the pulp-wood shipped to the United States, and five years will not elapse ere the American monopolists come down on their selfishness or exclusiveness and ask for a rearrangement of the tariff, doing away, on the part of the United States, with the duty on pulp manufactured in Canada, and, on our part, doing away with the export duty on pulp-wood, which would be to the mutual interest of both countries.

The Objections.

Formerly, and until a few years ago, the proposition to stop the exportation of pulp-wood to the United States by a law of prohibition or by a high export duty was adopted by nearly all the Canadian manufacturers of pulp; but of late the big American trust has managed to alter this patriotic sentiment, to rally our pulp manufacturers, and to arraign many of them against any measure of a nature calculated to restrict the exportation of pulp-wood. We have the strange spectacle of business men who, after signing petitions against the exportation of pulp-wood, have permitted their names to be put to petitions deprecating any measure which would tend to reduce or stop that same exportation of pulp-wood to the United States. Evidently these men are acting in their own exclusive interest, regardless of public welfare and of the general interest of the Canadian people at large. By this evolution they have secured the good-will of the American trust, which has pledged itself to buy their pulp at fair enough prices, or at prices which at least save them from starvation and ruin.

In support of the strange position they have taken of late, those Canadian manufacturers contend that the imposition of an export duty on pulpwood would *ipso facto*, under the famous clause of the McKinley tariff, raise the import duty on Canadian pulp to such an extent as to close the American market to the products of our pulp mills, which would ruin the Canadian industry. On the other hand, they admit that this ruin would be temporary, and that after a few years the Americans would be compelled to grant free access to our pulp to their markets. This was clearly exposed by J. E. A. Dubuc, manager of the Chicoutimi Pulp Company, in his evidence before the Colonization Commission at Quebec.

"I have the firm conviction," said Mr. Dubuc, that the United States want our pulp-wood, and that the imposition of an export duty would with time produce good results. Still, the imposition of this duty would for some time bring trouble to some of our Canadian manufacturers, who export their pulp to the United States, and would mean ruin for some of them, unless the imposition of that export duty be accompanied by a corrective.

"My opinion is that at the present time the American manufacturers of pulp and paper can hardly do without our wood, and that ere long it will be quite impossible for them to do without it, and I firmly believe that when Canada imposes a prohibitive duty on the exportation of pulp-wood the Senate of the United States will be asked to pass a law granting the admission, free of duty, of pulp and paper manufactured in Canada. This, however, cannot be accomplished in a day; it is even reasonable to expect that it will take a few years to accomplish this evolution. I have said before that the United States cannot do without our wood and without our pulp for a long time, but they can do without them for a few years as shown by the following fact. Last winter (1904) water failed mostly everywhere, and the production of pulp was far below the demand. As they could not get from Canada the pulp they wanted to fill their contracts, the paper manufacturers of the United States imported from Scandinavia all the pulp they required. . . . They can always, for a long time yet, import from Sweden and Norway as they did last winter the pulp wanted to supply their paper mills. Therefore, the imposition of a prohibitive duty on the exportation of pulp-wood by causing, of necessity, a rise in the duty imposed by the American tariff on the importation of pulp would close the American market to Canadian pulp; and, as the most part of our mills are not favorably situated for exporting their products to Great Britain, the imposition of such an export duty on pulp-wood would ruin the most part of those mills.

"In a few years, after the imposition of that export duty on pulp-wood, it is indubitable that equilibrium will be re-established. The United States will be forced to admit duty free our wood, our pulp and our paper. It will be the golden age for our pulp manufacturers. But what is there in that brilliant perspective for those who are actually in that industry if, in order to reach that golden age, they have, in the first place, to suffer disaster and ruin? What good for them in those bright prospects if, in order to realize them, their mills must pass into other hands, if such fine results can be accomplished only through the loss of the fruit of their initiative, their work, and their money?

"I consider, like the majority, I would almost say the totality of Canadians, that it is an anomaly to permit the free export to the United States of this raw material, which enables our neighbors to produce a surplus of pulp and paper, which they sell at slaughter prices in England, thus putting up a ruinous competition for our manufacturers on that market, the only one open to us, viz., the only one to which the access of our products is not barred by customs duties. This anomaly is yet worse when we consider that the Americans impose a high import duty on the pulp and paper manufactured in Canada."

Such are the principal objections on the part of manufacturers to the imposition of an export duty on pulp-wood.

But there are several remedies to all that, several ways of getting out of the difficulty without ruining or injuring any Canadian interest.

If it is not against the principles of international law, the most simple and effective way would be the prohibition, pure and simple, of pulp-wood exports from Canada to the United States. This prohibition would avoid the retaliatory clauses of the McKinley tariff, which can be applied only to counteract any duty imposed by a foreign country on raw materials exported to the United States to be manufactured in American mills. "To retaliate against prohibition, pure and simple," says Mr. Dubuc, "the United States Congress would have to pass a new law; but in this case the American press, unanimously, would not only rise against such a law, but would go further and demand the abolition of all the custom duties actually imposed by the United States on the importation of pulp and paper."

This would be by far the most effective means to settle the question, and if a law prohibiting the exportation of pulp-wood can be passed without infringing the general principles of international law, that law should be passed at once by the Parliament of Canada. No Canadian interest would be affected adversely by that law, but, on the contrary, it would give a powerful impetus to our pulp and paper industry, and soon place it at the head of that line of manufacture in all the world. The value of our spruce forests and water powers would be more than doubled, employment would be procured to thousands of skilled laborers, as also freight to our railways, millions would be spent in building new mills and in wages to workmen, woodmen and millmen.

Are not such results worthy of the favorable consideration of our Government?

Some may, perhaps, object that stopping the exportation of pulp-wood would deprive a good part of our population, particularly in the Eastern Townships of Quebec, or the means of living they find in making pulp-wood for exportation to the United States.

This result is not to be apprehended. The pulp-wood now exported would be required to supply the new and additional mills which would certainly be built in Canada, and there would be no appreciable diminution, either in the demand or price for pulp-wood. And why would settlers and holders of timber lands be not as well satisfied with Canadian as with American money?

Another proposition is to impose an export duty on pulp-wood and grant a bonus of so much per ton on the pulp and paper manufactured in Canada and exported. "This bonus," Mr. Dubuc says, "would protect Canadian manufacturers against retaliation on the part of the United States, would keep the American market open to the products of our mills, and, moreover, would place our pulp and paper manufacturers in a position to export their pulp and paper to Great Britain, which is impossible for them to do under the present circumstances. . . . I believe respect—that the prohibition, pure and simple, of the exportation of pulp-wood to the United States, or the imposition of a high duty on the exportation of —I have not the least doubt in this pulp-wood, or the payment of a premium on the exportation of paper made in Canada, would result in an enormous development of our pulp and paper industry. I firmly believe that with the run of time this prohibition or export duty on pulp-wood would open completely to our pulp and paper the doors of the American market, which will always be our best market. In my opinion, nothing would impart such a powerful impetus to the paper industry as the abolition of custom duties on the importation of machinery for paper-making, which machinery is not manufactured in Canada, and the payment of a premium of $3 per ton on the paper manufactured in Canada and exported. This premium would represent half the duty imposed by the American tariff in paper imported from Canada; it would place the Canadian manufacturers in a position to compete advantageously with the American manufacturers on their own market, viz., the market of the United States. To show you the sincerity of the opinion I have just expressed I do not hesitate to state that the day when this premium is guaranteed by law I will get in England all the capital required to commence immediately the building of a large paper mill at Chicoutimi."

That evidence of Mr. Dubuc shows the position clearly, and may be summarized as follows:

1. Stopping the exportation of pulp-wood to the United States would impart a powerful impetus to our pulp and paper industry.

2. Stopping that exportation by prohibition, pure and simple, if not against international law, would be the best way to do it, as it would not, and could not, provoke the application of the retaliation clause of the McKinley tariff, and not affect the exportation of Canadian pulp to the United States, and, therefore, would not hurt the business of the mills actually in operation and shipping their output to the United States.

3. Retaliation in the United States against this prohibition would require the passing of a law to that effect, and the pressure which would be brought to bear against such a measure by the American paper manufacturers and publishers would certainly prevent the passing of such a law by Congress.

4. The imposition of a prohibitiv duty on pulp-wood would stop the exportation of this wood, but would determine the application of the McKinley tariff, and thereby practicall close the American markets to our pul at least for some years, and thereb ruin the most part of the Canadia mills actually in operation.

5. After a few years of resistance an the exhaustion of the little wood the may have, the Americans would hav to show the white flag and consent t the free admission of our pulp, whic would give an extraordinary impetu to our pulp industry, develop it wor

derfully, and make up many times for the losses and ruin sustained during the interregnum.

6. To avoid the losses and ruin probably to result from the closing of the American markets to our pulp the Government should grant a premium on the exportation of pulp, which would enable our Canadian manufacturers to compete with Swedes and Norwegians on the British market and some other markets in continental Europe.

Perhaps our Government would hesitate to prohibit, simply and purely, the exportation of pulp-wood for fear of creating ill-feelings on the part of the United States; but there can be no objection of this kind in regard to the policy of granting drawbacks or premiums on the exportation of certain manufactures as practised by several Governments, namely, for sugar. This principle is accepted in political economy, nd there could be no objection whatever n the part of the United States to the pplication of this policy by the Canaian Government, which is quite at librty to grant, under any form, encourgement and help to any sort of manuicture as it deems proper to do in the est interest of the country.

While admitting that the United tates is a good, a natural market for ur pulp, we should not over-estimate ie value or necessity of this market; e should look to the United Kingdom id other European markets, which we ould so easily secure with the help of 1 export premium. Our pulp has aleady secured a foothold on the British arket, where its quality is acknowllged to be superior to that of the pulp 1ported from Sweden and Norway. his market takes yearly upwards of 500,000 tons of pulp, and the quantity is increasing. With a premium of $3 per ton, as mentioned by Mr. Dubuc, we would at once drive away the Scandinavian product and secure exclusively the British market.

We have always been too apt in Canada to over-value the American market. When the McKinley tariff was passed, many Canadians, wanting in energy and enterprise, predicted the ruin of our export trade in farm and forest products, particularly the ruin of our export trade in cattle, cheese, butter and eggs. What was the actual result? In despair we turned to the British market, which has proved far better than we could ever expect the American market to be; and if our country has accomplished such a wonderful progress of late, we owe it to our increased commerce with the Mother Country. And this trade increases by leaps and bounds every year. Had we remained under bondage to the United States, we would be to-day where we were twenty-five years ago. Canada would scarcely be known to the outside world. We would still be a poor and struggling colony, offering but small attraction to the best class of European immigrants coming to America in search of homes. A free gift of several hundred millions of dollars by the United States Congress to help us developing our farm industry and increasing our export trade in farm products would not have secured for us half the results we have obtained from the McKinley tariff, which was the determinative cause of our wonderful progress and development.

(Concluded in Next Issue.)

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N. W. Rowell, K.C., of Toronto, has signed as representative of the Ontario evernment on the Board of Directors the Lake Superior Co., and his place taken by W. H. Plummer, a merchant Sault Ste. Marie. W. H. Hearst, solicitor of Sault Ste. Marie, has been appointed legal agent of the Government in connection with the administration of the funds voted by the late Government as a subvention to help the company out of its difficulties.

BOOK NOTES.

The Bureau of Forestry, which is a branch of the United States Department of Agriculture, is doing a work of incalculable value to the great country to the south of us, and one of the many evidences that its work is already beginning to tell upon public opinion is to be found in the fact that there is a constantly growing demand from every state for the bulletins and pamphlets issued by the Bureau. For instance, there was such a call for bulletins giving a simple account of the nature and growth of trees, with instructions on practical forestry, that a special edition in book form has been printed for public sale. These are issued in two volumes of 88 pages each, in cloth, with many illustrations. The first volume explains the nature of a tree's growth, the food it requires, the conditions of growth as to moisture and light, the succession of forests in their natural state, the enemies of forests (man, insects, winds, etc.), with chapters on destructive lumbering and conservative lumbering. The second volume is chiefly devoted to practical forestry showing the remarkable results of scientific forestry in Europe and Asia, and giving advice under the special conditions to be found in America. Both volumes are edited by Gifford Pinchot, chief forester, who with great art has condensed a vast amount of information in a small compass in these little volumes. Mr. Pinchot is also the author of a study of the woods of Ne-ha-sa-ne Park, in the Adirondacks, published in 1898 by the Critic Co. of New York under the title of "The Adirondack Spruce. Of this comprehensive work the managing director of one of our largest paper mills said that it was the most practical handbook of the spruce tree ever published. Of special value in this handbook are the tables of volume and yield in spruce timber, and the working plans for lumbering operations. This and the primers of forestry are well illustrated.

The 1905 edition of the "Paper Maker's Directory of all Nations" has been issued by Dean & Son, publishers, 160a Fleet St., London. It makes a volume of 650 pages, bound in cloth, and is published at 10s. 6d. net. It is the only directory we know of which takes the whole world in its scope. The lists appear to be very full and correct, and, considering the international character of the work, it is very compact and conveniently arranged for reference. It covers 40 different countries, and 5,000 mills are reported on. It will be of the greatest value in bringing into touch with one another throughout the world the paper and pulp manufacturers, and the paper dealers and manufacturers of supplies connected with these trades.

QUEBEC TIMBER LIMIT SALE.

The special sale of spruce timber limits in the Province of Quebec on the 22nd ult. in the Crown Lands Office, Quebec, was the most successful yet held in the history of the Province in point of prices realized, as well as in the proportion of Canadian firms who appeared as purchasers. The first result was obtained because it was evident from the fact of the upset prices being from 20 to 40 per cent. higher than the sale put through by the late Minister of Crown Lands that the present administration did not propose to sacrifice the public domain. The bidders were careful and slow, but the prices in every case went above the starting point, and the average realized was about $160 per square mile. When it is remembered that the last sale only amounted to $138 per mile, it will be seen that the Hon. Mr. Turgeon the new Minister of Crown Lands, who supervised the sale, is fulfilling the ex-pectations that have been formed of hi administration.

The total net proceeds from the sal are $377,529.58, exclusive of ground rent and fire taxes, which if taken int account would make the total $396,645.5 The last sale under the Parent regim only realized $250,228 in all. It may b noted that on some lots on which a upset price of $200 was fixed, an ad vance of $50 per mile was bid, but the Minister of Crown Lands declined to allow them to be sold, preferring to wait for a higher price at another sale.

An esteemed correspondent sends us the following further notes of the sale:

The limits on the Upper Ottawa were withdrawn, bids not being good enough; berths on the Lièvre at the head waters fetched over $100 per mile, about 100 miles being sold in this section. On the St. Maurice there were sold about 1,000 miles at slightly over $100. I think the Quebec and Lake St. John Railway were the buyers. Then the limits on the Croche (St. Maurice), ran up to $305 a mile. On the St. Charles about 90 miles were sold at over $300 a mile. Then in Gaspe on York River (in the reserve), a block of about 400 miles fetched $250 a mile.

"I think Canadians, practically speaking, did all the buying this time. A regular auctioneer was employed, but this makes no difference; the tact of the Minister makes or mars a sale. Jno. Breakey bought in Gaspe; Ordway in St. Charles; the Sherbrooke Lumber Co. and the Quebec and Lake St. John Railway in St. Maurice, and Hunt on the du Lièvre. The Belgo Pulp & Paper Co. were also purchasers of a lot on Lake a la Carpe.

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THE CUSHING SULPHITE FIBRE CASE.

As indicated in last issue, arguments in the case of the Cushing Sulphite Fibre Co. were heard in the Supreme Court of New Brunswick last month.

The St. John Sun summarizes the points argued in the appeal as follows:

"1. That Mr. Cushing, being a secured creditor, should have valued his security in his statement of claim in his petition, and that not having done so, he was not a creditor within the meaning of the Act, and consequently could not petition.

"2. The case of the petitioner rested entirely upon the demand made by Mr. Cushing for payment of the coupons and the neglect of the company to comply with the demand, which by the wording of the Act is to be deemed insolvency. The appellants argued that in construing the Dominion statute this was simply a presumption of evidence, and as it was shown that the company was solvent, the petition should be dismissed.

"3. The appellants contended that while Mr. Cushing's coupons were legal the company had an offset against them to a much larger amount on account of the moneys claimed in the equity suit, which is now on appeal, and that as there is a bona fide dispute existing as to whether anything is owing to Mr. Cushing or not, a winding up order should not be granted.

"4. That the great majority of the creditors, secured and unsecured, and of the shareholders, objected to a winding up order being made, and that the Court should have respect to their wishes, and refuse the winding up order asked for."

After hearing argument the Chief Justice said it was greatly to be desired in the interests of the company's business that the parties should give and take until a settlement was reached, especially as it was clear that the mill was capable of earning large profits—probably $60,000 a year. One party wanted the works sold under the decree of foreclosure, while the other wanted the company wound up through liquidation proceedings. He did not want to reflect on either party, but deplored a deadlock when by mutual compromise the business could be carried on with great success.

After the other judges had expressed concurrence, the Court announced that it would adjourn the case until the 12th of September, and that Mr. Justice Barker would adjourn until some days later the sale which had been fixed by the foreclosure decree for July 15. The directors of the company in the meantime are to conduct the business as usual and as if no application had been made for a winding up order, and if in the opinion of the bench a winding up order should be made, it should take effect after the judgment in September.

Meantime the annual meeting of the company was held last month, when the directors' report showed earnings of $31,499.79. Since the close of the company year, March 1, the net earnings have been upward of $15,000. The outlook for the season is good, but the directors drew attention to the litigation pending, and pointed out that it might bring disaster. The report was accepted and the directors re-elected as follows: Captain Partington, president; Thos, McAvity, vice-president; C. C. Springer, W. H. Murray, G. S. Fisher, R. B. Emerson and A. H. Hanington.

THE WESTERN CANADA PULP AND PAPER CO.

Tht Western Canada Pulp and Paper Co., recently organized in London, sees plenty of trouble in its early days. It has the criticism of some leading financial papers on its flotation in London; it has had a law suit brought by a shareholder who demands the return of cheques paid for preference shares, while at, the other end of the line in British Columbia the Loggers' Association has attacked the company with Western impetuosity. The promoters of the company, which succeeded to the concessions granted originally to the Powell River Company and another pulp company, are not without friends, and the leading provincial papers have taken up its defense. The Victoria Colonist says:

"We understand that a most determined effort was made in Great Britain in financial circles to injure the prospects of the flotation there, and, if possible, defeat it altogether. We shall not say from what interests the opposition came, but it was inspired by British Columbia people. Opposition is not confined to the money market. Now that the enterprise has been successfully financed, we find that the Loggers' Association of Vancouver want the Government to prevent the company from securing the limits acquired under contract under the provisions of the Land Act, now repealed. J. S. Emerson, president of this association, has written a long letter to the Province of most damaging character, in which it is set out that the object of the company was not to obtain in good faith timber suitable for the manufacture of pulp, but that it was an attempt to obtain by fraud, misrepresentation and surreptitious methods lands, 85 per cent. of the timber on which is suitable only for the manufacture of lumber. This might be a more serious matter if Mr. Emerson represented a large element of the logging interests, but from information we have received, the membership is made up of persons principally in his own employ. His statements, therefore, are made largely upon his own responsibility."

The Vancouver World gives this opinion of the provincial opposition to the company:

"For some time an animated, and not altogether friendly, controversy has been waging in Vancouver between the promoters of the Western Canada Pulp & Paper Company and certain loggers, who having their eyes on the pulp company's limits, attack the bona fides of the promoters, In brief, the facts admitted by both parties are these: Under the Pulp Act of 1900 certain British Columbians applied for and received reserves on some fifty thousand acres of northern timber lands. These reserves they had cruised and surveyed at some expense, and then, taking their reports to London, they succeeded in floating a big concern, backed by strong financiers, to take over the concessions held by them and to build and operate a huge pulp and paper mill at Powell River. Stock was placed on the market, and the two million pounds offered for sale were promptly over subscribed. But before the Collins and Spicers of England interested themselves in the proposition, they sent out a pulp expert from Boston, whose duty it was to protect them from fraud. He made a hasty examination of the reserves, and submitted a flattering report. When matters had progressed thus far the Loggers' Association, led by President

Emerson, took up cudgels against the new pulp company, and commenced to hammer it for all they were worth. It was alleged that the Government had parted with valuable timber assets for a nominal consideration; that the reserves held by the pulp company contained little or no pulp-wood, fully 75 per cent. of it being cedar; that a large portion of the reserves was nothing more nor less than bare rock or scrub hillside, and that the British investors were being fleeced of their money. So contradictory are the statements made by the two parties that the World, though it has been investigating the case for several days, is so far unable to sift out the truth. If the pulp men are right, then the loggers are pursuing a course of which they should be heartily ashamed, and as a result of which British Columbia is bound to suffer. On the other hand, if the loggers are correct in their statements, a tremendous fraud is being worked on the British investor—fraud of which it is the duty of everyone who knows the facts to try and prevent for the sake of British Columbia's credit. Of course, the onus of proof lies with the loggers. Until it is shown that the pulp company promoters are not acting in good faith, it is only fair to assume that their enterprise is a legitimate one, and that they actually intend to build and operate a pulp mill."

One of the London financial papers opposing the enterprise states that not more than ten per cent. of the stock was subscribed for by the public, and that the balance had to be taken by the underwriters. This indicates a poor response, but it may be due to the shyness of the British investing public, as a result of unfortunate investing in mining and other stock in British Columbia in recent years.

The latest news from England is that the Pall Mall Gazette of the 19th inst. publishes a warning to the public on account of the decision of the Court of Appeal, which held that shareholders in the company are entitled to a return of their money. The Gazette cautions the shareholders not to attend the company's meeting, lest they lose their right to claim their money.

BRITISH CAPITAL IN CANADA.

Notwithstanding that the attention of British investors has been prominently directed to the resources of Canada as affording excellent opportunities for the profitable manufacture of pulp and paper, and lately able papers have been read before the Society of Arts on the remarkable developments that have been carried out during recent years, it is very evident that capitalists in this country do not readily respond to the opportunities offered for investment in the Dominion. There appears to be a marked indifference on the part of the British paper trade to engage in the wood-pulp industry in Canada; undoubtedly past experience has not been of a stimulating character. The difficulties of the St. John Sulphite Pulp Co., Limited, the Maritime Pulp Co., Limited, and the Acadia Pulp and Paper Co., and other concerns, are still fresh in the memory of British papermakers, and the latest information to hand is that the Cushing pulp mill will shortly be offered for sale by auction. On the other hand, the Americans have shown remarkable activity in the purchase of timber lands, water powers, etc. The operations of the Harmsworths in Newfoundland will no doubt be watched with considerable interest, and also the progress of the Western Canada Pulp Co., Limited, in British Columbia. The prospectus of the latter company, although subjected to considerable criticism in some of the financial papers, showed that valuable concessions were acquired, and that the company's prospects were encouraging. We understand, however, that public subscriptions fell considerably short of anticipations, and consequently the underwriters are saddled with a large proportion of the shares. — World's Paper Trade Review.

THE HARMSWORTH DEAL.

The following is the substance of the agreement entered into by the Newfoundland Government with the Harmsworths of London:

The Government leases to the Harmsworths out of Crown lands an area of about 20 miles by 40 miles, in the district adjoining Red Indian and Victoria Lakes, the lease to be for ninety-nine years, renewal at the option of lessees. The lessees pay the Government an annual ground rent of two dollars per square mile, and, further, the sum of fifty cents per 1,000 for trees cut for other purposes than pulp. The lessees have the right to all minerals within the area, paying the Government a royalty upon the same of 5 per cent. of the net profits. The lessees to expend not less than $250,000 in and about the erection of one or more pulp or paper mills, within four years from date of agreement; and within twenty years, a further sum of $750,000. Failure to expend these sums brings forfeiture of the agreement. Material and machinery for construction of the mills and extensions of same shall be admitted free of duty. The property within the leased area is to be free from municipal taxation. There is secured to the public a right of way 25 feet wide along all rivers and around and adjoining all lakes, so as to ensure to them the enjoyment of such lakes, ponds and rivers for travelling and fishing. The Government also reserve the right to construct through the property such roads, railroads and telegraph lines as they may deem necessary in the public interest.

This agreement came in for strong criticism, not only in the colony, but in England, and was the subject of a hot debate in the colonial Legislature. Mr. Morine, the leader of the Opposition, pointed out that under this deal any municipality within the area thus set apart would be prevented from obtaining revenue by ordinary means of taxation. The rights of the people were considered to be sacrificed to such an extent that petitions were sent to the Colonial Office, in London, begging the Imperial authorities to veto the legislation.

The agitation is of the same character as that against the contract with the Reid Company, the contractors for the Newfoundland railway. In that case the forcing of the deal through the House against the protests of the people was the cause of the downfall of its political authors, and the same result may follow this affair before the job is through.

A "Newfoundland Committee" has been formed in London to oppose what is considered a gigantic land grab.

Among the points raised by the Newfoundland Committee against the deal is the following: "Because it has been stated, on the authority of the editor of the Government organ, who holds an official position in the House of Assembly, that 'reports from a seemingly reliable quarter state that the Harmsworths have already profited greatly from their connections with this project, it being alleged that the mere knowledge, by English and Canadian paper men, that the firm has entered into this scheme, has secured them reductions in their paper contracts worth $1,000,000 in the next ten years'" The Harmsworths, says a London correspondent, are known as the keenest paper buyers in this country, and they have always made a feature of long contracts. For years they have been talking of building pulp and paper mills, and this very fact has given them a strong lever in keeping prices down to a minimum. The very talk of entering the ranks as pulp and paper makers must have saved them thousands of pounds in contracting for their "news" supply during recent years.

It is further objected that the contract was rushed through the Legislature with needless haste; and though the Premier recalled the bill after it had passed its third reading and made some amendments purporting to safeguard the public interest, the chief objectionable features were not removed.

In the British House of Commons on the 21st June Mr. Whitley asked the

Colonial Secretary if he intended to advise a veto on the concession, but Mr. Lyttelton was non-committal and said he would not decide until he saw the bill as passed by the Colonial Legislature. Meantime the Daily News, Morning Leader and other London papers attacked the concession as a betrayal of the interests of the colonists.

Notwithstanding the agitation it is reported that the concessionaires have made their contracts with the Reid-Newfoundland Co. for the freighting of the products of the mills, and for the use of the company's water power at Grand Falls, as well as for the leasing of 800 square miles of the Reid Company's timber lands on terms corresponding to those made with the Government. The Harmsworths, it may be mentioned, control thirty newspapers and magazines in Great Britain.

The following account of the London Daily News of the territory covered by the concession, will explain the cause of the public agitation in the Colony:

"The upper basin of the Exploits River of which it is proposed to make the Harmsworth combination absolute rulers —as we shall presently show—is a lake country more than a hundred miles long, its scenery surpasses even that of Killarney. It cuts right across the heart of the colony. The three thousand square miles included in the concession are a noble and favorite sporting and fishing country, and the deer of the great Northern Peninsula of Newfoundland pass along this ground twice every year, when they migrate southward in the autumn and return in the spring. By fencing in the concession Messrs. Harmsworth will be able to capture almost all the deer of Newfoundland. Thus they will have the most extensive, beautiful and richly-stocked hunting country in the world; and conditions in the contract to which we shall refer later, will enable them to exploit the region by cutting it into a hundred or more shooting grounds for millionaires, to the exclusion of native sportsmen. It is believed that there are valuable minerals in the concession, and these are handed over absolutely for a consideration which is little more than nominal. The Exploits River is nearly as long as the Thames, and the great region of mountain, river, lake and forest handed over forever to Messrs. Harmsworth is as large as the Thames basin from London up to the head waters up near Gloucester. It includes a dozen fine lakes, one of which, Red Indian Lake, is three times the length of Windermere. These lakes and their connecting rivers, with the water power and traffic facilities appertaining to them, are handed over to the Harmsworth Trust. The New Harmsworth Province is now connected by rail with both East and West, the railway cutting across the Exploits River just below the ceded territory. The citizens of Newfoundland have recently had to buy this railway from its monopolist owner at a cost of over a million dollars, and in 1901 paid Mr. Reid, the late owner of the railway, nearly another million for certain land concessions formerly granted by the Legislature. Newfoundland having thus taxed itself "up to the hilt," as one of the speakers at the protest meeting said, to recover the national heritage in the land and means of transit, is now actually going to hand over to an English firm of capitalists the very land for the opening up and development of which the railway was required.

"This new Province, which is being handed over absolutely to Harmsworth partners, is twice as large as Prince Edward Island, and four times as large as Rhode Island. The so-called 'Pulp Bill,' under plea of encouraging a paper industry, actually sets up a power in one of the most fertile and promising regions of the British Empire as absolute as that of the Czar or the Sultan. The concession is perpetual. 'Forever and ever' is the note that rings through the Newfoundland Press."

In an interview with the Montreal papers, B. F. Pearson of London, who is related to Pearsons, the well-known publishers, and who is also interested in the Dominion Iron and Steel Company, and further, is an official of the Estates Company, Newfoundland, made some interesting statements regarding the plans of the Harmsworths. He said that when the Harmsworths got their plants in Newfoundland working, they would manufacture two hundred tons of paper a day. The Estates Co., Limited, had sold the Harmsworths 11,000 square miles of timber limits, and the R. J. Reid Co. 303 square miles, and the Newfoundland Government had leased them 2,000 square miles for 99 years, with the privilege of a perpetual renewal of the lease. In all the Harmsworths will have 13,303 square miles of timber lands. They are building a plant that will cost $3,000,000, and that will employ 1,000 hands. This plant will use up 75,000 cords of wood yearly but as the Harmsworths intend to scientifically conserve their limits, the supply will be permanently sufficient to enable them to make 200 tons of paper daily till such time as paper ceases to be a necessity.

With regard to the question raised in the British House of Commons, the Premier of Newfoundland, Sir Robert Bond, cables a letter to the Standard in which he rather challenges the interference of the Home Government. This is the letter:

"The British Parliament has nothing to do with the matter, which is purely a local concern. The facts are that a private firm in England purchased from parties here for $600,000, their leasehold and interest in 1,100 square miles of timber property, including the fee simple of mills, houses, and twenty-three miles of private railway built thereon. In order to encourage the investment of British capital in the establishment of a paper pulp industry, the Government has transferred to the English firm about 800 square miles of unappropriated and unimproved land, forming a watershed, most of which is barren and is required by the English firm as a firebreak, over which they could exercise control, and without which they would not risk the investment of their capital. They have to pay the Government a rental on all timber, agricultural, and mineral land within the whole area leased, and a royalty on all minerals mined therein. The fishing and hunting privileges, and free access to all lakes and rivers within the leased area, are reserved to the public. No monopoly has been conferred.

BOND."

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PAPER GARMENTS.

Garments made of paper have long been used in eastern Asia, but only in default of other clothing or on special occasions. In western countries the only articles of dress made of paper, until recently, were collars, cuffs and shirt bosoms; that is to say, articles which are usually starched. Now, however, numerous inventors are endeavoring to introduce woven paper fabrics.

Some time ago an Italian, Prof. Zanetti, devised a method of making fine and strong yarns by twisting very thin silk paper, cut into strips about one-tenth of an inch wide. As yet these yarns are used only for wicks of wax candles and in the manufacture of incandescent gas mantles.

A greater advance has been made in Saxony. Here also narrow strips of paper are spun, by a process patented by Claviez & Co., Paper and cotton are also spun together, so that in the finished yarn the paper envelops the cotton. These yarns are used as fillers in conjunction with cotton warp in weaving drillings, suitable for towellings and summer waistcoats, trousers and skirts.

Heavier and warmer cloth is made by combining paper and woolen yarns. The fabric is cream colored, and may be washed repeatedly without injuring the surface. It is well adapted for tennis and lounging suits. Sufficient cloth for a jacket, waistcoat and trousers costs only ten marks, or $2.50, and still cheaper garments are made for laborers. This new product is named xylolin.

For such use, however, raw materials even cheaper than finished paper are sought. Spinning mill refuse, consisting of very short, smooth fibres that cannot be spun, goes as a rule to the paper mills. Many attempts to utilize this material have been made in spinning mills, and experiments in spinning it wet suggested the idea of further comminuting the short fibres in paper machines. In this way a thin, fibrous paste was produced. This when poured on sieves yielded a thin, soft paper, which, partially dried and cut into narrow strips, could be spun into yarn. Other cheap paper stock, including wood-pulp, can be converted into yarn by a similar process, and so spinning and paper-making meet.

One brand of these cellulose, or wood-pulp, yarns, is called silvalin. During the last ten years many similar processes have been patented. The manufactutre is still in the experimental stage, but definite progress has been made, and the industry has a promising future before it.

PROCESS FOR WRAPPING PAPER.

Among the United States patents recently issued is one to William J. Arkell and Bartlett Arkell, executors of James Arkell, of Canajoharie, N.Y., deceased. for a process of making stretchable paper of comparatively durable grade, suitable for wrapping or packing purposes. This purpose is accomplished by forming in the paper fine, deep, and tight creases or crinkles, which enable the paper to stretch when under strain, so that the paper does not break. The inventors start with a suitable finished paper, which when crinkled will be adapted for use as a wrapping or packing paper. This paper is then passed through a saturating bath of suitable liquid, such as water, whereby the paper is thoroughly saturated. The wet paper is then deposited upon a smooth-surfaced roller, to which it is made closely to adhere, and is carried by the roller against an obstruction, such as a doctor-blade. This obstruction, or doctor-blade, crowds the wet paper back against itself, and thereby forms crinkles in the paper, which is thereafter removed and dried, so that the crinkles become permanent in the paper and render the paper stretchable.

"Prior to this invention," it is said in the specifications, "there has been no way of increasing the resistance of the heavier grades of paper to strains except by using a better and more expensive quality of paper stock, or by using a greater amount of paper stock and making thus a thicker, heavier paper. In such cases, however, the paper is substantially, if not absolutely, unyielding and non-stretchable, and is, therefore, liable to rupture when put under sudden, sharp strains. The product resulting from the present invention, however, greatly increases the power of the paper to resist breaking strains, especially when these strains are confined to isolated areas of greater or less extent, and this is done without employing a better quality of paper stock or more paper stock. In fact, the invention makes it possible to start with paper made from paper stock of poorer quality or less in quantity, or both, and yet obtain a resulting product—that is, crinkled wrapping or packing paper—which is far superior to uncrinkled paper when made out of paper stock better in quality and greater in amount."

The process is most conveniently carried out in connection with an apparatus shown in the accompanying drawings. Figure 1 is a central vertical sectional elevation of such apparatus. Fig. 2 is a sectional elevation of the same, taken on the line 2 2 of Fig. 1.

The paper in the form of a web is most conveniently taken from a roll and carried thence through a saturating bath 2. In passing through this bath 2 the paper is most conveniently carried on a perforated roller 3, which depresses the paper into the bath, and allows thorough access of the water to the paper. After emerging from the bath the paper is deposited upon a smooth-surfaced roller 4, against which it is made to closely adhere by the roller 7 rotating in contact with the roller 4. The roller 4 is preferably made of iron or other metal, and the roller 7 is preferably covered with rubber. As the paper moves forward with the roller 4 it comes in contact with the doctor 5, which strips the paper from the roller 4 and at the same time crowds the paper back against itself, and so forms the crinkles in the paper.

The paper is then carried away by the belt 6 and dried, so as to make permanent the crinkles formed in the paper, and thereby render the paper elastic or stretchable. The roller 7 serves to press the paper close upon the roller 4, so as to make it closely adhere to the roller with such tenacity as will enable the doctor to crowd the paper back against itself, and thereby crinkle it. It also serves to remove the surplus moisture in the paper. It is important that the paper contain the right amount of moisture before it reaches the doctor 5. If there is either too much moisture or too little moisture, the crinkles will not be properly formed in the paper by the doctor. It is also important that the wet paper be pressed in sufficiently close adherence to the roller 4 to enable the doctor to form the crinkles in the paper.

Fig. 1,

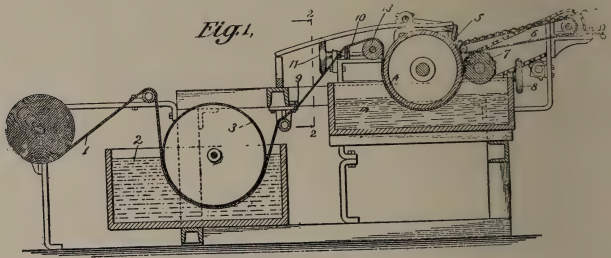
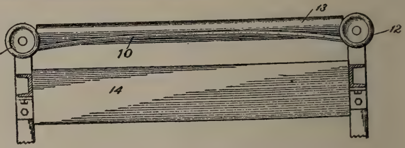


Fig. 2,

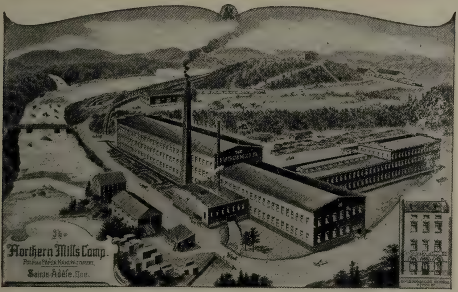


For the purpose of regulating this moisture and this pressure the roller 7 is made adjustable to and from the roller 4 by means of hand-wheels, one of which is the wheel 8. Of course, it is not essential to the process that the surplus moisture be removed from the paper at the same time the wet paper is pressed in close adherence to the roller 4; but it is preferable to accomplish these steps at the same time and by the same agency. As the paper emerges from the bath 2 it is liable to to have longitudinal wrinkles therein, caused by the expansion of the paper, due to the moisture absorbed.

For the purpose of removing these wrinkles the wet paper is extended laterally at some stage before it reaches the doctor 5. This lateral extension of the paper is preferably accomplished before the paper is deposited upon the roller 4. The means which are found efficient for this purpose consists of one or more curved bars or rods over which the paper is passed. In the apparatus shown in the drawings two of these bars 9 and 10 are shown. They serve to efficiently smooth out the paper by extending it laterally, and so remove the wrinkles.

THE NORTHERN MILLS CO.

The Northern Mills Company, whose formation has already been referred to, has built a mill at Mont Rolland, near St. Adele, Que. It is situated on the banks on the North river from which it obtains its water-power. The falls, which have one hundred feet head, can furnish the mill with four thousand horse-power. A tube nine feet in diameter and seventeen hundred feet long, furnishes the water to the turbines, of which there are four. The mill itself is built with all the modern improvements, and is designed to make both pulp and paper. The paper machine is ninety-nine inches wide, and can furnish an average of twelve tons of paper daily. It is supplied by six beaters. Among the papers put on the market by this mill are the "Provincial Bond," "Adelia," and "Northern Mills," which are all writing papers of the best quality. The pulp department has also the most up-to-date equipment. It is furnished with two wet machines and the same number of grinders. Its average capacity is ten tons a day of the best fine ground wood pulp. The officers of this company are: S. J. B. Rolland, president; Hon. J. D. Rolland, vice-president; L. LaBrie, secretary-treasurer; Hon. R. Prefontaine, Henri Rolland, and Jean Rolland, managing director. The head office of the company is in Montreal, 278 St. Paul Street.


The
Northern Mills Comp.
Sainte-Adèle, Que.

* * *

PEAT FOR PAPER.

Rufus Fleming, United States Consul at Edinburgh, Scotland, in a recent report to his Government, says:

"About two years ago in Scotland and Ireland there was a revival of interest in the utilization of peat as a material for making paper, book board, etc. The failure of many previous undertakings, large and small, did not deter capitalists from investing in new plants, two of which have been operating for some time. The principal product is wrapping paper. It cannot be said that the industry is as yet much beyond the experimental stage, nor that any very important results are promised.

"The difficulties that beset the earlier experimenters have not been wholly overcome and are still serious drawbacks to the economical use of peat. They are: (1) The troublesome and expensive process of getting rid of dirt, requiring a large amount of soda in the boiling vats; (2) lack of sufficient fibre in peat, necessitating the addition of other material, such as old gunny bags, ropes, hemp, etc., to make paper that will serve the ordinary purpose of grocers, dry goods merchants, and other tradesmen, my information being that little of the peat paper now put on the market is more than 75 per cent. peat; and (3) the apparent impossibility of bleaching the peat pulp to a satisfactory extent, which means practically that only brown paper can be produced.

"In view of these obstacles and of the low cost of manufacturing paper from straw and wood pulp, German straw paper selling in this market at $34 per ton of 2,240 pounds, it is not a cause for surprise that the progress of the peat paper industry has been slow. One merit claimed for peat paper may lead to its extensive use for certain purposes—the manufacturers say that it will not harbor moths."

Mill Matters

New grinders have recently been added to the pulp department of the E. B. Eddy Co.'s mills at Hull, Que.

The pulp mills of the Sault Ste. Marie Pulp & Paper Co. are steadily running, the entire output for 1905 having been sold in the States.

A half-yearly dividend, at the rate of 7 per cent. on preference stock of the Laurentide Pulp and Paper Co., of Grande Mere, was paid on the 1st July.

F. W. Bird & Son of East Walpole, Mass., manufacturers of hardware papers, have taken out a permit for their Canadian branch at Hamilton. The cost of the building is reported at $18,000.

H. D. King, D. S. Baird, Fred Harcourt and Alf. M. Wovenden, and E. G. Place of Westmount, Que., have received a Quebec charter to manufacture, buy and sell all kinds of stationery, with a capital of $195,000.

Le Quotidien of Levis reports that the work of construction of the St. Raymond Pulp & Paper Co.'s mill, under the direction of Michael Connolly, is being pushed, and will probably be finished next autumn.

George Murray, author; Robert Reid, sculptor; W. H. Drummond, doctor; Hullett Desbarats, printer, and William Stewart, bookkeeper, all of Montreal, have been incorporated with $50,000 capital stock, to carry on a general publishing business.

Negotiations are now being conducted with parties in Newfoundland with New York parties, with a view of erecting another pulp mill in the Island. One of the principals will visit some of the timber areas around Bona Vista and Notre Dame Bays, with a view to purchasing them for the proposed mill.

T. W. Nealon, of Philadelphia, one of the company recently formed to manufacture peat board at Cannington, Ont., called last month on W. A. Robinson, the Reeve, and expressed himself satisfied with the quantity and quality of peat. He is going over the ground again with an engineer, and if they decide to build a paper mill he says the works will cover four acres of ground, and will be the largest of their kind in America.

On the 5th inst., the ratepayers of St. Catharines, Ont., voted on a by-law to give a free site and pay for part of the power to be used for a term of years to the Jenckes Machine Co., makers of pulp and paper machinery, of Sherbrooke, Que. The by-law was carried and the company is preparing at once to move to St. Catharines, where they will employ 100 hands to start on. The company required to extend its works, but had not sufficient room at Sherbrooke, and hence the move.

Reports from men in the field on surveys of the eastern section of the Grand Trunk Pacific from Moncton west say the new road will traverse immense forests of spruce and cross rivers having abundant water powers, so that the conditions will be favorable to creating a large pulp and paper industry by the construction of branch lines. The Toronto World's Ottawa correspondent says, however, that the Government members are getting frightened at the cost of the eastern section, which is much heavier than supposed, and it may, therefore, not be gone on with.

The Canadian Rubber Company of Montreal, Limited, has purchased exclusive rights for the "Republic" Side Wire Tires for Canada. This Side Wire Tire is manufactured in the United States by The Republic Rubber Company of Youngstown, Ohio, and is the latest and, the manufacturers claim, the most scientifically constructed carriage tire on the market. In the United States the Sales of "Republic" carriage tires have reached enormous figures. The Canadian Rubber Company of Montreal, Limited, will commence the manufacture of "Republic" tires in Canada immediately.

At Massena, on the St. Lawrence, a new specialty is being added to the paper industry of the Watertown district. This is the Indestructible Fibre Co., whose head offices are at 45 Broadway, New York. Indestructible fibre, we are told, closely imitates natural wood of any kind, marble or porcelain. In its manufacture an ingenious mechanical device is used which rearranges the fibres of wood pulp as it runs over a wet machine, whereby sheets 8 feet by 12 feet are produced which are a good imitation of the various materials designated. A favorable point is the great cheapness of the output, as compared with the real thing. The material, too, can be made fire or waterproof, and it will not check, shrink, peel off, splinter or discolor with age. It can be embossed in any design or bent into any shape.

The case of Patterson vs. Brown was before the Court of Appeal in Toronto last month. This was an appeal by defendants from judgment of Britton, J., in favor of plaintiff, upon the findings of the jury, for the recovery of $1,666.66, in an action by a promoter of the Montrose Paper Co., against two other promoters, who afterwards became respectively the secretary-treasurer and the manager of the company, to recover one-third of the amount of a bonus of $5,000 obtained from the town of Thorold, pursuant to an alleged agreement with defendants. Plaintiff alleged that the bonus had been obtained by his exertions, and had been paid to the company after it was organized, and he claimed in the alternative the $1,666.66 for the value of his services and moneys expended. Appeal allowed with costs, and action dismissed with costs.

Chas. B. Gordon has again visited Dryden, Ont., in the interests of the Dryden Board Mills, whose concession of pulp-wood limits, made by the late Provincial Government, has not been ratified by the present Government. In an interview with the Wabigoon Star he said: "I have just returned from London, where I have been the last two months in connection with the Dryden Board Mills. I have arranged for the floating of our company there, and expect that it will be placed before the investors this summer. The time will depend upon the judgment of our financial agents, but believe it will be in plenty of time to begin work early this fall, if not before." Meantime Mr. Gordon is not quite prepared to submit a prospectus. The company is evidently depending on the ratification of the concession, and wants also from the municipality an extension of time in which to commence building operations, and further, an exemption from taxation for twenty-five years.

The St. John's, Newfoundland, Herald of June 29th says: "We understand that messages were received in the city today announcing that negotiations had been concluded for the establishment of another large pulp and paper enterprise in this colony. The principals in this instance are the Pearsons of London, who may be described as the great rivals of the Harmsworths, as they produce the Daily Express, Pearson's Magazine, and numerous other publications. With them are associated Coates & Sons, the well-known bankers, and the properties they are acquiring are those of the Timber Estates Co. at Glenwood and Gander River;of Wood, Barker & Co. at Exploits; and of the New Lands Co., at Norris Arm. Pearsons and Coates have agreed to furnish the capital for the thorough inspection of the properties immediately, and if they are approved by the experts sent out, the properties will be acquired from the present holders and an enterprise equal to, if not greater in magnitude than that of the Harmsworths, will be inaugurated.

D. H. Porter from New York and a gentleman from Niagara Falls, N.Y., appeared before the Board of Trade of Thorold, Ont., on the 12th inst. and told of their desire to locate a plant there for the manufacture of bottles, kegs, drums and other articles of wood pulp. It was stated that containers as large as a barrel were contemplated. It was further stated that Mr. Porter is the owner of 28 patents in 22 countries of the world. An expenditure of $10,000 was contemplated. A committee was appointed to go into the question with the promoters.

Eugene Renaud and Joseph Severin met a horrible death as the result of a boiler explosion in the Riordon pulp mills at Hawkesbury, Ont., on the 14th inst. Men were at work in the mills as usual, when suddenly a terrific explosion took place, and the two men were terribly scalded. From head to foot they were one mass of ulcerations when brought to the Royal Victoria Hospital in Montreal. Severin, who was 30 years of age, expired shortly after his admission, but Renaud, who was 21 years of age, survived his companion by several hours.

The Abner Doble Company of San Francisco announces that arrangements have been made with the John McDougall Caledonian Iron Works Company, Limited, of Montreal, Que., whereby the latter become sole licensees for the manufacture of the Doble system of water wheels in the Dominion of Canada. The tangential water wheels and needle regulating nozzles manufactured by the Abner Doble Company are well known for their excellence of design and workmanship, and considerable engineering interest has recently been shown in relation to the four 8,000 horsepower wheels which that company has built for operation in California power plants. The McDougall Company have the most extensive machine works in Canada—their plant including machine shops, pattern shop, foundry, forging works and structural material shop. Their plant is, therefore, well equipped for the manufacture of water wheels and other hydraulic machinery. They already have in hand the building of a 100-horsepower wheel to operate under 170 ft. head taking water through a 3½ in. jet and having a speed of 130 revolutions per minute. The Canadian licensees are prepared to furnish the steel pipe, structural work, and all machinery necessary for complete power plant, and the Doble Company requests that all engineers or parties interested in waterpower developments in Canada, address the McDougall Company direct. They have retained the Abner Doble Company as their consulting engineers.

—In the Zeitschrift fur angewandte Chemie, the preparation of straw cellulose by the sulphite process is discussed by R. Dietz. Hitherto, cellulose of good quality has been obtained from straw only by the soda process, because the silica is not removed by digestion with sulphite. Rye and oat straw contains about 1.5 per cent. of silica, and barley and wheat considerably more, and this renders the fibre too stiff and harsh. Dietz has found, however, that the silica can be almost completely removed by digesting the straw with a dilute solution of hydrofluoric acid. Only the theoretical quantity of the acid is required, and the digestion can be performed very easily and rapidly. The subsequent treatment with sulphite may be much briefer than in the case of wood, and the resulting fibres are of excellent quality. If these results are confirmed upon the large scale, the method should prove eminently suitable for the preparation of high-class cellulose.

* * *

—A London correspondent notes that quite recently British paper makers have had brought under their notice some excellent samples of bleached rag pulps. These pulps are being produced by the Peschelmuehle Rag Pulp Mill, near Dresden, Germany, the American agent being Jean Freese, of 132 Nassau Street, New York. The mill has a daily capacity of ten tons and the product is graded, viz.: White linens, 1 and 2; blue linen and gray linen, 1; cotton, 1 and 2, etc. With wood pulps, straw pulps and rag pulps, it will not be long before esparto pulps are placed upon the market. Several processes at the present time, with the view of working esparto into pulp on the spot, are receiving attention. In building new paper mills it will not be necessary for the manufacturer to sink a lot of money in plant for the treatment of his raw material; he will be able to confine his expenditure to the equipment of the making department, and at the same time have the advantage of selecting a wide range of pulps suitable for a variety of papers.

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PULP AND PAPER MARKETS.

The pulp market is in an uncertain state on both sides of the Atlantic, and the Canadian market reflects the uncertainties of the U. S. and Europe. The frequent rains of June and July have kept the water up well in most pulp making districts of Canada, and in the Wisconsin district of the Western States there have been unusual floods. There is also plenty of water in Northern New York, but the New England States complain of low water to such a degree that it is feared steam plants will have to be put in operation. There is still overproduction of news in the United States, a condition not to be wondered at when it is remembered that in the last half of 1904 new mills were started which added

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Prices and Samples on Application.

BARKER,
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MACHINE KNIVES
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FOURDRINIER WIRES
CYLINDER MOLDS, DANDY ROLLS
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Brass, Copper and Iron Wire Cloth
SOLE MANUFACTURERS OF THE
Bell Patent Flat Wires for Book Papers
F

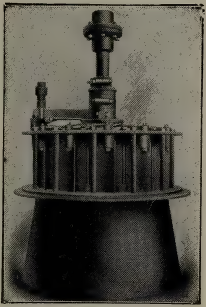
300 tons a day to the previous normal
production. This seems to indicate that
before long some of the poorly equipped
or less favorably situated mills across
the border will be put out of business.
News mills are closing down here and
there on slight provocation, and we
hear of some U. S. mills taking contracts
for as much as 3,000 tons at $9 a ton less
than last year. The fact of rags and
paper stock being 15 to 20 per cent.
higher than last year makes the situation
difficult for other mills.

The Canadian mills have little to com-
plain of as far as employment goes, most
of them being run to full capacity; some
have more orders than they can fill at
present.

Prices are about the same as last
month for Canadian fibres, but ground
wood-pulp is somewhat easier. The
nominal price for ground wood at the
mill is $12, but there is some shading
or immediate delivery. Reports from
New York indicate a plentiful supply,
nd while some pulp mills propose to
hut down, others will take advantage of
he high water and stack up their pro-
uct on the chance that hostilities
etween Norway and Sweden will bring
n era of high prices.

In some parts of Scandinavia com-
laint is again made of low water. Re-
orts from Sweden show that the stocks
f pulp in Europe are low in every
ountry, and pulp manufacturers are
atisfied that if they only keep cool and
old out still further, they will get a
onsiderable advance in prices. An
nusually large quantity of pulp has
een brought into the British market
uring the past month from Canada, and
his has made some Swedish and Nor-
egian agents nervous to such an extent
iat there was almost a panic at one
ime recently. The British paper-maker
sually buys in the summer and autumn
or winter stock; and while last summer
iere was 100,000 tons in stock in Nor-
ay and Sweden, it is asserted that
ocks are very low in both countries,
hile the London market is bare. It
ppears to be, therefore, a question of
ndurance between the pulp-maker and

The
Samson
Turbine



We have supplied many of our Samson turbine water wheels to pulp mills for direct connection to grinders, for driving beaters, and, in fact, for all power purposes.

The Samson has an even and regular speed under all changes of load, ensuring better and more even quality of pulp and an even output from the paper machines.

Of course the work placed on a water wheel when used for this purpose is very trying, but the Samson has never yet failed, under even harder conditions.

It also costs less per horse power than any other turbine.

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his British and European customers. The price now demanded by them is 38 kr. to 40 kr., or say $10.25 to $10.50.

* * *

DUTY ON MACHINE PEELED PULP.

A despatch to the Montreal Star of the 17th, says: Local pulp men have been notified by their American representatives to ship no more pulp to the United States for the present, owing to a duty of twenty per cent. having been imposed on Canadian machine peeled pulp by the American Government. It is estimated that only about half of the year's shipments have been made so far and the remainder is on the hands of the Canadian pulp men. A slump in the American paper trade is thought to be responsible. Canada exports about 350,000 cords of pulp wood per year, about half of which is machine peeled.

* * *

CHEMICAL MARKET.

The rosin market is in a disturbed state, and prices uncertain owing to the operations of the Consolidated Naval Stores Co., of Jacksonville, Fla., a corporation which has been able to control the U. S. market for the past three years. Bleaching powder is in good dmand, and orders are being booked in New York at $1,25 and over for foreign or domestic. The same may be said of caustic soda, for which sales are being made for next year's delivery at $1.75 to $1.80 for high test. China clay is dull, and is quoted at $11 for foreign.

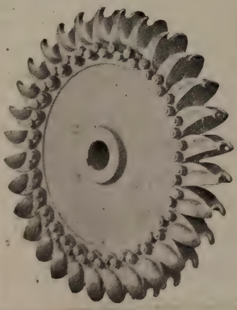
Quotations in the London market are: ammonia alkali, 58%, £4 12s. 6d.: caustic soda, 76-77%, £10 10s.; bleaching powder, soft wood, £4 10s.; soda crystals, £3; salt cake, £1 15s.; sulphur, £5 5s., and china clay, 10s. 6d., f.o.b. Cornwall, for common, to £1 4s. for highest grade in bulk; in casks, £2 5s. to £2 7s., f.o.b., London.

* * *

JULY RAG AND PAPER STOCK MARKET.

Montreal, July 17, 1905.

A feeling of firmness is gradually developing in the Paper Stock Market. At the present rate of consumption it is apparent that domestic supplies of paper stock will not be sufficient and import orders are gradually increasing. The best demand is for both new and old cotton rags. Manilla rope and old bagging is also firmer. Waste papers, especially common waste, are selling slowly. The reason of this is not very apparent, unless the large volume



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The runner of our exhibit wheel, equipped with Doble Ellipsoidal Buckets, is shown in the illustration, after its successful run at the Exposition.

Write for our Bulletins Nos. 4 and 5.

John McDougall Caledonian Iron Works Co., Limited, Montreal, Exclusive Licensees in Canada.

of general business has produced an unusually large supply. When the stocks now held are disposed of we look for an advance in sympathy with other paper-making materials.

Report of June 14th.

Europe, and roofing mills for the present are well supplied.

No. 1 white shirt cuttings	$5.25	to	$5.75
Light print cuttings	4.00	to	4.50
Unbleached cuttings	4.50	to	5.00
White shoe clips	4.00	to	4.50
Colored shoe clips	2.75	to	3.25
Domestic white cottons..	2.25	to	2.50
Blues and thirds cottons.	1.40	to	1.50
Roofing stock	.60	to	.70
Waste papers	.30	to	.35
Manilla rope	2.00	to	2.12½

LEBLANC SODA PROCESS.

The Leblanc soda process, says the Chemical Trade Journal, continues to find great difficulty in competing with the ammonia-soda process in the manufacture of soda, and at the same time with the electrolytic process in the production of bleaching powder. Hasenclever, who is the principal manufacturer by the Leblanc process in Germany at the present day, considers that the outlook for it is decidedly gloomy. Half the world's production of chloride of lime is already in the hands of the electrolytic works, but further developments are not to be expected in the near future, as the producing power is already considerably greater than the demand. Whereas the chlorine industry is unpleasantly situated, the ammonia-soda manufacture, which yields no by-products, is flourishing, and it has been greatly assisted in its fight with the Leblanc process by the electrolytic works. The continued prosperity of the ammonia-soda industry is ascribed by Hasenclever not only to the excellence of the process, but also to the fact that all the works that make use of it are combined in a great association which is able to keep down competition. The principal hope of the

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7-3

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J. H. GATELY'S Guard-Board Canadian Patent 74,735,

Ejector Vacuum Pumps — Bertrams Limited — Patent.

DR. C. WURSTER'S Patented

Pulping Engines and Kneaders

FOR PULPING-UP

Dry Wood Pulp, Machine "Broke," Old Paper Stock, Waste Papers.

MADE IN THREE SIZES TO PULP THREE, SIX AND NINE TONS DRY WOOD PULP IN TWENTY-FOUR HOURS. — FIVE, EIGHT AND TWELVE HORSE POWER REQUIRED.

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Beaters and Edge Runners can be filled in from one to two minutes if the pulp is first disintegrated by one of the Wurster Engines, while the output is larger with the same power. These Engines do four times the work of stones, and neither shorten, affect, crease, or wet the fibre in any way, nor change the color or the sizing. They can also be used for Kneading Clay and other Fillers, and Bleaching Powder.

For full particulars apply to 2

DR. C. WURSTER, 29 Abbey Road, St. John's Wood, LONDON, N. W.

ENGLAND.

Leblanc process appears to lie in the discovery of new uses for sulphate of soda, and Reusch mentions that considerable quantities are being converted into sodium sulphide, which is used for the manufacture of sulphur dyes. The latter are being employed more and more widely, because they have comparatively little tendency to fade. For the hydrochloric acid there appears to be little prospect of any remunerative use being found, and Hasenclever goes so far as to suggest that it should be simply rendered innocuous and allowed to escape, as was done formerly in many places, although it would now be necessary to obtain the permission of the alkali inspectors. In the south of France, galleries several kilometers long were formerly built of limestone and soda residues, and the hydrochloric acid fumes were conducted through them; the calcium chloride formed was removed from time to time through suitable manholes. Hasenclever publishes a photograph of such a gallery.

⁂

NEW INCORPORATIONS.

The Sovereign Lumber Co., of British Columbia has been incorporated with a capital of $100,000; to deal in saw-logs, pulp-wood, and lumber.

Manning Wood Fibre Co., Toronto, has been incorporated with a capital of $100,000, by W. W. Thompson, L. Avery, Gravenhurst; T. Porter, Embro; H. Manning, Toronto; J. S. Brown, London; D. Hogg, Perth, and J. A. Irvin, Campbellford. To manufacture excelsior packing, and deal in lumber, timber, etc.

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Paper Machines,
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Boilers,
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Press Rolls,
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Pumps, Heaters.

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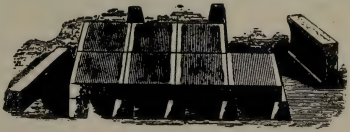

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Importers and Exporters.
Wood Pulp, FOREIGN AND DOMESTIC Rags AND Paper Stock
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Cable address "AFFECTIVE," New York.

The Kingdom Printing Co., Winnipeg, capital, $60,000, has been chartered to carry on the business of printers, lithographers, engravers, bookbinders, etc., and to manufacture paper bags, boxes, cardboard, etc. A. Kingdom, E. A. Kingdom, D. A. Pender, and W. J. LeCappellain, Winnipeg, are the first directors.

Northern Sulphite Mills of Canada, Sturgeon Falls, Ont., $500,000; J. Craig, London, Eng., and Sturgeon Falls; G. C. Loveys, J. M. Ewing, F. Ford and B. Osler, Toronto. To deal in all kinds of timber, woods, pulp-wood, paper, etc.

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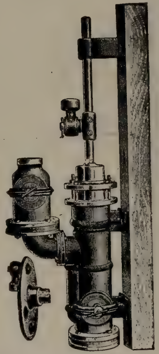

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Soda Ash 58 per cent.
Bleaching Powder 35-38 per cent.

SOLE AGENTS IN CANADA

Winn & Holland, = = Montreal

—The Royal Paper Mills, East Angus, Q., have closed their paper mills indefinitely, but will continue the manufacture of pulp. An effort will be made to sell or lease the property.

* * *

Herr A. Scheck, a commissioner from the German Government, was in Toronto a few days ago on a mission to investigate Canada as a source of pulpwood and pulp. His mission is taken in consequence of the threatened scarcity of the pulp wood of European countries. This visit may lead to the German manufacturers securing more of their pulp supplies from Canada.

* * *

—The crosshead of the Corliss engine that runs the paper machine of the Miramichi pulp mill broke a few days ago, and it was feared that the mill would be shut down two weeks before

JAMES KENYON & SON,

Telegraphic Address "KENYON-BURY" DERBY STREET MILLS Telegraphic Address "KENYON-BURY"

BURY, = LANCASHIRE

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Couch Roll Covers, Wet and Dry Felts of all kinds, including

Patent Cotton Dry Felts

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PARIS	Rue de Londres No. 29.
ANGOULEME (France)	43 Rue Louis Desbrandes.
LYONS	54, Cours Gambetta.
MILAN	24 Via Solferino
TOLOSA (Spain)	18 Calle San Francisco.
NEW YORK	99 Nassau Street.
ST. PETERSBURG	Little Podjascheskaja House, 4, Qu. 16.

Telegraphic Address:

“WERTHEIMO, HAMBURG.”

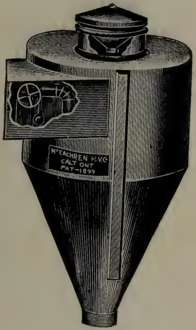
repairs could be effected. But in three hours the mechanical superintendent had the shafting connected with the main shaft, so that the paper machine could be run by the main engine. The mill averages 40 to 45 tons a day.

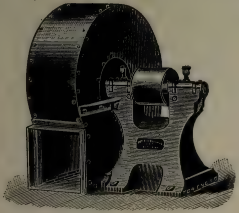
* * *

Western United States roads are reported to be considering the use of ties made from pressed pulp. Ties from this material can be manufactured at a less cost than ties can be cut from trees, it is claimed, and besides being lighter, are very durable. The two claims last mentioned can no doubt be proved, but the first claim has yet to be put to a demonstration.

* * *

—The plant of the By-Products Paper Co., at Niagara Falls, N.Y., referred to elsewhere in this issue, has been sold by the court for $60,000, to United States purchasers, who, it is said, will invest $500,000 in the undertaking.





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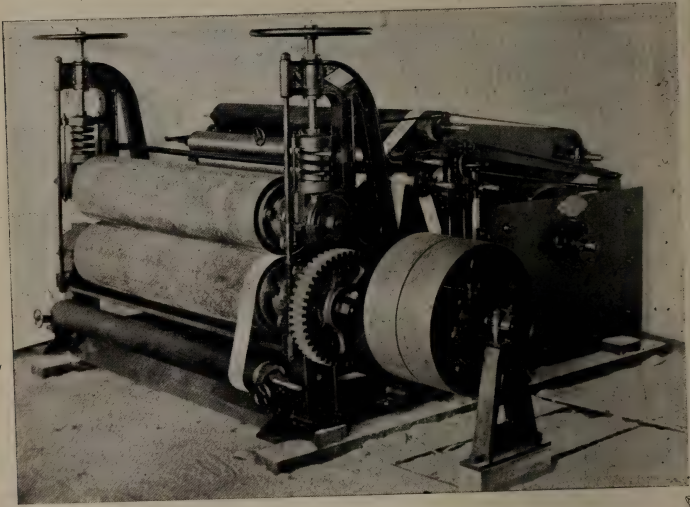

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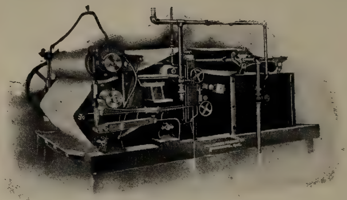

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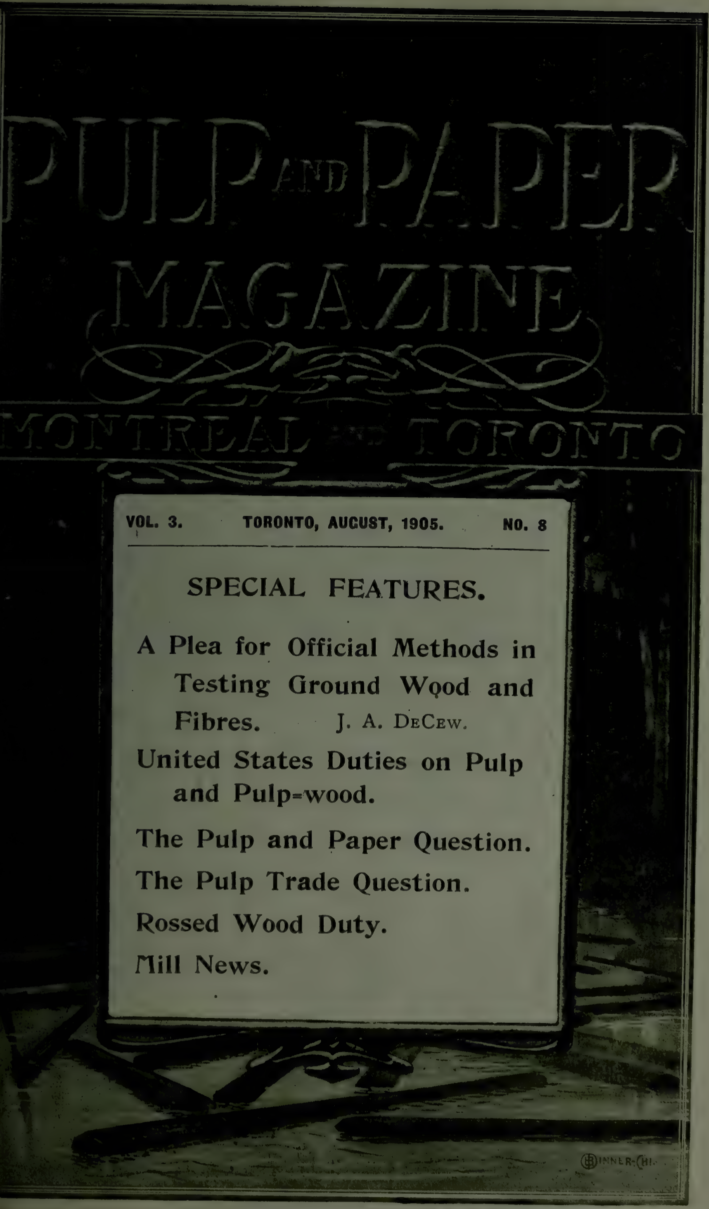

PULP AND PAPER MAGAZINE

MONTREAL AND TORONTO

VOL. 3. TORONTO, AUGUST, 1905. NO. 8

SPECIAL FEATURES.

A Plea for Official Methods in Testing Ground Wood and Fibres. J. A. DeCew.

United States Duties on Pulp and Pulp-wood.

The Pulp and Paper Question.

The Pulp Trade Question.

Rossed Wood Duty.

Mill News.

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INDEX TO ADVERTISEMENTS.

Atterbury Bros. 43
Beloit Iron Works 49
Benson & Co., W. T 10
Bentley & Jackson 4
Bertram's, Limited 6
Black-Clawson Co., The 7
Bowater & Sons, W.V 52
Bredt & Co., F. 10
Brunner, Mond & Co., Limited 44
Canada Paper Co. 51
Canadian Fairbanks Co, Limited, The 37
Canadian Rubber Co. of Montreal 8
Carrier, Laine & Co. 48
Castle, Gottheil & Overton 9
Cheney-Bigelow Wire Works 38
Christie, J 52
Christie, Limited, George 3
Cousland & Co., A. 10
Davis & Co., F. H. 43
Dean & Son, Limited 41
Eastwood Wire Mfg. Co 2
Emerson Mfg. Co 37
Freese, Jean 3
Hamilton Mfg. Co., Wm 39
Hardy, George F. 9
Hawksworth & Sons Co., Limited, Alfred. 12
Hay Knife Co., Limited, Peter 38
Hough, R. 52
Huyck & Sons, F. C 5
International Pulp Co. 9
Jenckes Machine Co., Limited 12 & 50
Johnson & Sons, Limited, C. H 6
Kenyon & Son, James 45
Klipstein & Co., A 11
Kimball, Herbert S. 9
Knight & Co., John 47
Lea & Coffiin, and H. S. Ferguson 9
Little & Walker 9
McDougall Caledonian Iron Works, The John 41
McOuat & Son, T. 44
Paton, Thomas L 3
Perrin & Co., Ltd., Wm. R. 44
Porritt & Sons, Joseph 10
Porritt & Sons, Limited, Samuel 52
Porritt Bror. & Austin 6
Pringle & Son, T. 9
Pulp & Paper Trading Co., The 38
Pusey & Jones Co. 42
Quebec & Lake St. John Ry. 9
Seymour & Guest 9
Sheldon & Sheldon 47
Smith Co., S. Morgan 51
Snell, Co., Samuel 43
Sullivan & Co., C. F 10
Union Screen Plate Co 3
Union Sulphur Co., The 45
Vogel, C. H 9
Wallace-Jaastad-Drewson 44
Waterous Engine Works Co., Ltd 50
Wertheim & Co., A. 41
Whittaker, Richard 16
Wilson, Paterson & Co. 11
Winn & Holland 42
Wurster, Dr. C. 44
Young, J. S 52

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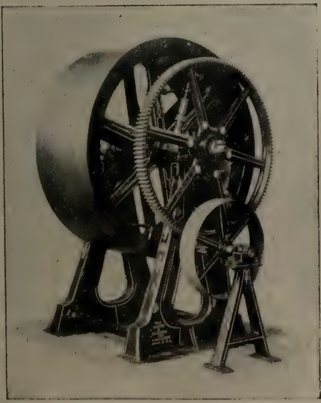

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CATALOGUES AND TRADE CIRCULARS.

The Caxton Type Foundry, London and Toronto, has issued a series of leaflets illustrating the Hotspur, Hawarden and other series of new types.

The Tympalyn Co., 246 Summer street, Boston, a booklet explaining the advantages of tympalyn as a press packing, also a folder giving facts about the Dux feeder made by this firm.

The Portland Co., Portland, Me., folders describing Chapman's static electricity neutralizer for paper mills, printing offices, etc.

The Peter Hay Knife Co., Galt, Ontario, illustrated catalogue of machine knives for all purposes, including paper cutters, barker knives, chipper knives, rag cutter knives, leather and wood-cutting knives, etc.

Wickersham Quoin Co., Boston, catalogue of modern locking devices for printers.

Champion Coated Paper Co., Hamilton, Ohio, samples of coated paper.

Dennison Manufacturing Co., Boston and New York, samples of gummed papers and shipping tags.

*

Sentinel Publishing Co., Toronto, has been granted a charter with a capital of $25,000; H. C. Hocken, F. Dane, J. McMillan, T. W. Self, J. R. L. Starr, Toronto; W. J. Parkhill, Midland, and T. S. Sproule, Markdale, are members of the company.

*

The Belgo-Canadian Pulp and Paper Company, of Shawinigan Falls, Que., shipped a few days ago by the Steamship "Heros" a cargo of 2,800 tons of pulp direct to Nantes, France. This is the second cargo shipped by this company to France, through T. R. McCarthy shipping agent of Montreal, a consignment of over 2,000 tons having gone to Nantes about a month ago. We are very glad that the claims advanced in favor of a pulp trade direct with France have been so speedily realized.

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QUEBEC, P. Q.

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THE PULP AND PAPER MAGAZINE OF CANADA

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NITED STATES DUTIES ON PULP AND PULP-WOOD.

Two decisions of meaning to Can- an manufacturers of pulp are reported this issue. One is the ruling of the easury Department at Washington t crossed pulp-wood going into the ited States from Canada is a manu- tured article and is dutiable. The er is a decision by a New York judge t the differential stumpage dues rged by the Province of Quebec on p-wood taken from crown lands of Province and exported to the United tes are in effect an export duty, and being so all such wood is liable to the countervailing duty provided for in the United States tariff law. Hence all pulp from Quebec entering the United States is now liable to an extra duty per ton—equivalent to the differential—that is 25 cents per ton. By a former decision this duty applied only to wood taken off crown lands, but now by this decision it applies also to pulp made from wood taken off private lands, and furthermore to pulp manufactured in another Province from wood cut in Quebec.

It will be remembered that in Quebec a rebate of 25 cents per cord is allowed off the stumpage dues in case the wood taken off crown lands is manufactured into pulp within the Province. This is a discrimination which has the effect of an impost and the New York judge's decision, therefore, appears to be well based, and the application of the duty to wood from private lands is evidently made because of the difficulty of tracing up the source of wood when manufactured for export.

If these decisions are looked at from their probable effect on the national policy of Canada they may have some effect in starting the country on a career of development in pulp and paper manufacturing which timidity has prevented it from entering years ago. The fear that the poor Quebec farmer might lose a dollar or two a year in the sale of pulp-wood has restrained some legislators from taking a step which, after the first shock, would result in an income of dollars to the Quebec farmer where he now receives cents. But recent events have shown that Uncle Sam has not been buying Quebec pulp-wood solely for the love of the Quebec farmer, but because he has not got it in available places and at low prices at home. It is also beginning to dawn upon many Canadians that pulp has a steadily rising value throughout the manufacturing countries of the world, and that the supply of good pulp-wood accessible to markets is limited and is diminishing at a rate corresponding to its demand. We have enormous water powers still unused and we have enormous areas of pulp-wood still untouched. We know their value.

Others besides United States exploiters concede this value by word and act, as witness the visit of Herr Scheck, who comes officially from Germany—itself a large pulp manufacturing country—to recommend to his countrymen some means of supplementing German supplies of pulp direct from Canadian sources.

No one claims that Canada is the only country able to supply cheap pulp and paper. The United States could probably get along without a cord of our wood or a ton of our pulp—though not without raising the price of its paper to such a point as to prevent it from maintaining its export trade. But if American manufacturers expect to sell
everything and buy nothing Canadia
must brace up, as they did in the pr
duce trade, and look abroad for bus
ness. Mr. Langelier's paper, continue
in this issue, is an instructive reminde
in this regard as to what past attemp
to suppress Canadian trade have led

And this leads us to a remark upo
the interesting pamphlet just issued
J. E. A. Dubuc, of Chicoutimi, quot
elsewhere in this number. Mr. Dub
thinks the United States can do witho
75 per cent. of our wood. But if
does without Canadian wood and pu
and wishes to keep up its paper expor
it will have to draw the amount of
present Canadian supplies from Sca
dinavia. And if Scandinavia supplies
withdrawn from the European mar
that shortage can and will be filled
Europe by Canada. It will simply me
a diversion of the stream, not
damming up. In fact, this is an ev
which Canada should welcome, for
must sooner or later get a strong fo
ing in the European pulp market and
quicker we get at it the better.

When Mr. Dubuc speaks of the Uni
States as "our natural market"
therefore, by inference essential
Canada, he uses an old phrase which
facts of modern commerce have w
down to insignificance—what is "
natural market?" The natural mar
of Canada, as we have already said
any country under the sun that will
our goods. Geographical contact
mean something or nothing, accor
to conditions. Ten thousand miles
ocean divide Canada from Japan and
it is cheaper to ship goods to Ja
than it is to some parts of the "
tinent to which we belong." Dama
was more the natural market to an

ome than a town across the near-by ps. A tariff law may be a greater rrier to trade than the Pacific ocean. onditions and prices, not miles, determine what a natural market is.

We have before pointed out inac- racies in Mr. Dubuc's statistics, in the tition he drafted on this question me months ago, but accepting his esent figures as correct we take up ose in which he shows what Canada ould lose by an export duty on wood d we supplement them by showing the other hand what Canada would in if the wood now shipped to the ates as raw material were manufac- red into pulp and paper at home. For nvenience of comparison these figures e put side by side:—

Loss.

According to Mr. Dubuc if sale of ood to United States is stopped by port duty:

0,000 cords at $7 per cord	$2,800,000
0,000 tons of pulp at $16 per ton	1,600,000
Total	$4,400,000

Gain.

If same amount of wood is made into ulp and paper, as per calculations made June Pulp and Paper Magazine:

irect investment in mills and plant	$21,666,666
nnual wages distributed to Canadians	3,000,000
Total	$24,666,666

So that we have an enormous gain to ffset Mr. Dubuc's loss if we manu- cture at home what is now sent abroad the form of raw material. It is true at his figures of the amount of pulp- ood actually shipped to the States ould be about doubled, but even then the gain would be a magnificent one, and as shown in our June number, an added population of 38,500 would be required for carrying on this industry, not considering the growth of trade which would flow in indirect ways dependent on these industries. Besides this, railway authorities inform us that their profits on general merchandise and manufactured goods resulting from the same material being worked up in Canada as compared to the freight on wood will be more than 10 to 1. These facts furnish all the answer that is needed to Mr. Dubuc's question: "What will become of these poor people were the Government to deprive them of this means of subsistence?" The result of an independent home pulp and paper industry would be that "these poor people" where they are making $1 now would then be making $20 in supplying wood to home mills, and supplying produce to the towns created by the same home mills, and they would be able to send their sons and daughters to learn trades in Canadian mills instead of having to witness the painful sight of their migration to other countries to earn a living.

But the fear of the United States market being closed to Canadian pulp is groundless. We know that many of their mills would simply close up without it, and just as soon as such a policy of excluding Canadian pulp and wood was adopted the price of news paper would go up, and the United States daily press would then have something to say in a matter that would enormously increase the cost of their paper. There is already a constant agitation by leading dailies against the big paper syndicates, who are skating on very thin ice in this matter.

With many of Mr. Dubuc's other ideas we can heartily agree, and we hope to see so able and enterprising a citizen converted to a policy that will make for the development of his Province on really national and patriotic lines.

To conclude, there is no reason for an unfriendly feeling towards the United States for its tariff laws. That country adopts the tariff it finds to be in the interests of its own people, without, let us believe, any unfriendly feeling towards Canada. Let Canada do the same, and where trade on a fair basis is denied us in one country let us look to others. In this case there is all the more reason why Canada should work out her own problems independent of what her next door neighbor may do, because this pulp-wood question is not merely a question of trade, it is a forestry problem too, that vitally affects our climate, rain fall and the permanence of our water-powers, which are entirely dependent on forest distribution. Thus affecting climate and rain fall, it becomes a problem also for our agriculturists. What, for instance, would become of the great dairy interests of Quebec if, by the depletion of spruce, the St. Lawrence valley were converted into a region stricken by summer droughts, as the indications now actually point that way?

Pulp & Paper Currency

Flooring of wood pulp is a German invention which is reported to be coming largely into use in that country in the best houses as well as in cheap apartments. A rough board floor is first laid, any sort of soft pine being used, since this is to serve merely as a foundation for the flooring proper. Ove this is spread a special preparation o pulp which dries almost as hard a stone, and with an absolutely even sur face. When thoroughly dried it can b painted or stained to imitate any wood and, as it is impervious to water, oil o dirt, it can be kept cleaner than the bes hardwood floor, and the absence o cracks prevents the gathering of insect under the baseboard. It costs but two thirds of that of a hardwood floor.

A month or so ago the St. Joh Lumber Company and the Van Bure Lumber Company, both United State corporations doing business on the S John River but having interests on th New Brunswick side along with othe lumber companies, got into a quarr concerning booms and dams on th upper part of the river, in Norther Maine, and the contest almost end in bloodshed. The trouble has th month broken out afresh, involving tw other lumber companies, the Ea Branch Improvement Company and th Marsh & Ayer Company, two Mai companies. The Improvement Com pany was granted a charter two yea ago with permission to build a dam Chamberlain Lake, the source of All gash River, a branch of the St. Joh The mill owners of the St. John alle that the waters of the Lake are by th dam diverted to the Penobscot and t St. John is lowered, and its lumber i terests are thereby injured. A party men blew up the gates of the dam f a distance of 20 feet, and the place patrolled by the other company in fighting mood. The St. John Lumb Company had ten or twelve million f of logs tied up on the St. John a needed the water held by this dam let them out. As men employed by these companies are operating in New Brunswick as well as in Maine, it is easy to see how international complications might arise by the violence of a lot of headstrong men. It is to be hoped that the authorities on both sides will reach some agreement by which the lawless elements here may be kept under control. A little firmness and co-operation at the beginning will save a great deal of the bad feeling that follows such faction fights, which are discreditable to civilized communities.

Returns just issued at Washington show that the paper exports of the United States to Canada have considerably increased in the paper year, the totals for the year ending June 1905 being $2,031,565, against $1,727,645 in 1904. American trade with Great Britain has dropped from $2,300,803 in 1904 to $2,259,255, and that with Australasia has taken a more violent fall from $1,052,649 to $849,404. Trade with many other countries has increased and it is evident that Uncle Sam is trying hard for a share in the world's market.

In the course of an article on the countervailing duty on Quebec pulp the Toronto Globe said: "The Americans are unable or unwilling to distinguish between pulp from Ontario trees and Quebec trees. This is not surprising, as the roots of an exempt Ontario tree might draw nutriment from the penalized soil of Quebec. But in retaliatory or countervailing duties it is natural to take short cuts, so all Canadian pulp is, for the present, subjected to the special duty. While the Americans continue in a state of chronic alarm lest they buy something from someone or someone else may make something it is almost impossible to trade with them. The best policy is to ignore them and avoid them as far as possible. If Quebec wants to continue the encouragement of pulp manufacture it would well to adopt Ontario's policy of prohibiting the export of logs. Then if our neighbors want to buy pulp we will sell, and if not, we will sell elsewhere." Quoting this the Paper Trade Journal, of New York, makes this comment: "It will be recognized that the facts stated are not correct, but putting that aside for the moment, we would call attention to the final bit of advice, 'And if not, we will sell elsewhere.' For instance, where is 'Elsewhere?'" The question of our contemporary discloses an illusion quite common across the border, and that is that there is no country in the world with which Canada can trade except the United States. That country undoubtedly is a large market for Canadian products. But the dependence, so far as there is actual dependence, is mutual. As a matter of fact the United States sells more than twice the amount of goods to Canada that Canada does to the States. If this mutual trade were cut off absolutely which, therefore, would lose most? But the Journal asks, where is "Elsewhere?" Elsewhere for Canada's pulp and paper trade is Great Britain, the continent of Europe, Australia, South Africa, India, Japan, and other lands which are already beginning to do business with us. Two cargoes of 5,000 tons of Canadian pulp have been shipped direct to France in the past month, an envoy is now in this country from Germany looking for available future supplies for the German paper mills, and a British agent has since the beginning of the month concluded deals for the purchase of Canadian pulp on a larger scale than heretofore. These are the beginnings of the "Elsewhere" trade, which Canada is seeking and finding.

It will be remembered that the representatives of the Harmsworths were in New Brunswick looking over the ground before they settled their plans in Newfoundland. Having this in mind the following remarks of the St. John Telegraph are interesting: "The Province of New Brunswick could have induced the Harmsworths, of London, to establish here their great pulp and paper industry, but the Harmsworths wanted about half the Province free. They could not get it, so they passed on to Newfoundland in search of better terms and found them. Had the Newfoundland Government taken a leaf out of New Brunswick's book in this matter it would not have given excuse for the present cry that it is giving away property of immense value for nothing. Newfoundland is enormously rich in natural resources and poor in industries and hence the argument is advanced that capital must be interested and industries established. The argument is good if it be agreed that the inducements to be offered to capital shall not be so generous as to be foolish and unbusinesslike. Newfoundland is unusually prosperous just now—an indication that there was no necessity to get the Harmworths' industry at any cost. . . . The Newfoundland legislators could have afforded to pursue a less reckless search for new industries. To assent to the Harmsworth proposition looks like very short-sighted business policy. Capital was bound to seek so fine a pulp-wood area, and if there was some delay, during every year of it the tract would increase in value."

Although Japan has some wonderful paper-making materials and is able to make remarkably good use of them, her manufactures of very fine paper and of common news by modern processes are only beginning, but the acquisition of the Island of Saghalien opens up the prospect of a wood pulp industry there in the near future, as there are said to be forests of spruce with some water-powers sufficient to carry on the industry. This development is a matter of time, but meanwhile there is trade to be done by Canada there in pulp. In a recent report by Alex. MacLean, Canadian Commercial Agent there, it is mentioned that the value of paper made from straw and pulp in 1896 was estimated at only $1,372,000, and that of pure Japanese paper at $5,154,000. The amounts increased for the former to $3,570,000 in 1901, and for the latter to $6,325,000, thus showing the rapid growth of the industry in "European" paper in that country. The pure Japanese paper, generally unbleached and rough in surface, is very strong, and is specially adapted to the requirements of the Japanese on account of its durability and softness. Tissue papers from mulberry bark for copying, "dental" and "transferring" purposes, as well as napkin papers, are now exported all over the world Among all kinds of Japanese paper, says Mr. MacLean, the tissue is highly recommendable to Canadian importers for its substantial and strong quality unsurpassed of its kind. Many foreign firms have sent this paper to all parts of the world, in value about $140,929 in 1903, and Japanese firms are quite willing to submit samples to any Canadian consumers or dealers.

The article by Mr. De Cew in thi issue on the vexing problem of pulp-testing takes up the subject from a Canadian standpoint, and is an instructiv contribution towards a solution that may be accepted on both sides of the ocean. Further light may be thrown on the subject by the action of the Testing-house Committee of the Manchester Chamber of Commerce, which has sent out a former employee of the institution to Canada to make tests of shipments on the Canadian side with the same apparatus and under the same conditions as carried out in England. The results will be compared with tests of the same shipments made in Manchester. To make such a test of value, the Canadian method should be applied on this side and then in England and the two sets of results thus compared.

* * *

The Pulp Trade Question.

The following are extracts from a pamphlet issued by J. E. A. Dubuc, managing director of the Chicoutimi Pulp Co., on the pulp-wood question as affecting chiefly the Province of Quebec:

Present State of the Question.

During the past ten years the exportation of pulp-wood, the manufacture of pulp and that of paper have developed to such an extent that many people, even among those who are most moderate in their opinions, fear that our spruce forests will soon be exhausted. Men occupying a high position in the political world, independent journalists and persons who have looked into the matter have raised the alarm-cry and have asserted, as the foremost item of a new programme to be carried out, that the cutting of our spruce forests must be regulated if not stopped entirely for some time, so as to preserve the chief source of revenue of the province.

They consider that we are wasting our patrimony and ruining ourselves, while those who are charged with the administration of such patrimony are blamed for not putting an end to such a state of affairs. This, in a word, is what has been stated for some years in the House of Assembly, in the newspapers and on the hustings. Let us now, without bias, examine the situation and see whether there is any cause for alarm.

Extent of Our Spruce Forests.

At present the number of cords of pulp-wood cut in the Province of Quebec per annum is from 720,000 to 750,000, of which from 400,000 to 450,000 are shipped to the United States and 300,000 are converted into pulp and paper both for local consumption and for export. Such a quantity is enormous, one will say. Absolutely speaking, it is. Compared with the extent, the wealth of our forest domain and the natural conditions of second growth, it is not.

Our spruce forests are immense. They comprise the regions of the St. Maurice, the Saguenay, the North Shore (from the Saguenay to Labrador), the South Shore (counties of Montmorency, Montmagny, Rimouski, Matane, Gaspe), the Eastern Townships and the James Bay region. The whole forms an area of 327,731 square miles, or 208,741,463 acres, giving, at 2½ cords per acre, a first cut of 454,874,490 cords of pulp-wood, taking only the trees of regulation diameter, viz.: 8 inches for black spruce and 11 inches for white. (See Mr. J. C. Langelier's paper read at the convention of the Forestry Association held at Quebec.)

It is admitted by persons in the trade as well as by the Forestry Associations of Canada and of the United States, that spruce grows again in 25 or 30 years. As we wish to remain within the bounds of truth, let us say that it grows again in fifty years, which means that the natural re-growth is equal to two per cent. of the quality above mentioned, and that, by treating the forests properly, we may cut every year, for ever, two per cent. of such quantity, say 9,000,000 cords without touching our capital. Such are the area and richness of our spruce forests.

The Saguenay region comprises 13,000 miles of spruce forests; that of the St. Maurice 18,000 miles, or, in all, 30,000 square miles. Let us say that there are only 15,000 miles (10,000 for the St. Maurice and 5,000 for the Saguenay) accessible at present and capable of being utilized to advantage.

We then have 15,000 miles, at 640 acres per mile equal to 9,600,000 acres at 4 cords per acre equal to 38,400,000 cords of wood. Spruce growing again in 25 years—let us say fifty years—that means 2 per cent. annually of a second growth equal to 778,000 cords per year. This means also that practically, if properly made use of and efficiently protected against fire—and it is essential that this be done —we have in those two small corners of the province a never-ending source of supply for our present needs. In other words we might continue every year to ship 400,000 cords of wood to the United States, to manufacture 300,000 tons of pulp for local consumption and for export, touching only half of the Saguenay and the St. Maurice regions and leaving intact the immense regions of the North and South Shores and of James Bay. If our forest domain be protected against fire, as it should be, and if lumbering therein be regulated in a rational manner, can we not say that it is inexhaustible?

This Wealth is Perishable.

Our spruce forests constitute almost incommensurable wealth. But it is perishable wealth, contrary to that of our mines which is imperishable. Thus the Saguenay and St. Maurice regions, which we have taken as the object of our demonstration and which represent 38,400,000 cords of wood may be completely destroyed by fire next year or by insects in a few years. These dangers constantly threaten our forests, and, whatever measures may be taken to protect them, we shall succeed only in diminishing the imminence of such dangers, but never in securing full protection. Pulp spruce gives our forests their value at present, but should any other raw material be found that will allow of paper being made more economically than of wood—which is not impossible and which must not be lost sight of—these forests would then be worth very little.

Admitting the above, viz.: 1. The immense area and wealth of our pulpwood forests; 2. The perishable nature of those forests; 3. The possibility that economic changes may render them of no value; is it not our interest, while there is still time, to derive the greatest possible benefit from them by exporting all the pulp-wood for which we can find a market, by making as much pulp as we can consume and export, and by manufacturing all the paper we can dispose of at home and abroad.

Is It Wise to Encourage the Exportation of Pulp-wood?

It is asserted that it is contrary to sound doctrine to encourage the exportation of raw material, that the country would benefit by its being manufactured here, by its being converted, in this instance, into paper, into which the wood is ultimately transformed. Two means of attaining this end are proposed:

1. To entirely prohibit the exportation of pulp-wood, or, what comes to the same thing:

2. To impose so high an export duty on such wood that it would be equivalent to prohibition.

It is further stated that, if either o such methods were adopted, the Americans, who cannot do without our timber, would come here to convert int paper the wood they have bought so fa from us, and would give employment t a much greater number of Canadia workmen.

Are Americans in Need of Our Pulp Wood?

In the first place, are we quite sure that the Americans cannot do without our wood, at least for some years? And then, if they can do without it, would not either of the above prohibitive measures be more prejudicial to us than to the Americans? The United States consumes yearly 2,250,000 cords of wood and we sell them only 400,000 cords, or less than 20 per cent. It must be admitted that this is an insignificant quantity with which they might easily dispense without very great inconvenience. It is true that there are in the United States some mills without limits from which they can procure supplies, and which depend on Canadian wood, but there are only a few of these, and in this case they are a factor of but slight importance. A considerable portion of that wood is bought from us by the Americans because it costs them less, directly or indirectly; directly, the price including transport being lower than in the United States; indirectly, the advantage of being able to buy it in Canada, enabling them, through the competition they thus establish, to regulate the price of wood in their own country.

We therefore think we may say that the Americans can, for some years at least, do without 75 per cent., if not the whole, of the pulp-wood they buy from us at present. According to the statistics of Canada for 1903, 275,619 tons of pulp are manufactured in Canada; of this quantity, 118,869 tons are consumed in this country and 156,750 tons are exported. Of the latter, 98,756 tons, or 62 per cent. of our exports have been sent to the United States.

If the Americans are not in absolute need of our wood, if they can dispense with at least a good portion of it for some years, what will be the result of a law prohibiting the exportation of such wood or subjecting it to a very high export duty practically equivalent to prohibition?

Our Natural Market.

Our natural export market for pulp is the neighboring Republic, our best customers are the United States, which buys from us 62 per cent.—nearly 100,000 tons in 1904—of our total export. Canadian industry cannot easily do without the American market. Now, if the Government of Canada were to impose on pulp-wood a very high, a practically prohibitive duty—say from $2 to $4 per cord—the Washington Government would be obliged (under the Dingley Act) to at once impose an equal duty on Canadian pulp shipped to the United States, say $2 to $4 per ton. This would close the United States pulp market to us, and, as nearly all the Canadian pulp mills are too far from a seaport to export their products to Europe with advantage, it is easy to see in what an embarrassing position they would be placed if the Government were to impose an export duty on pulp-wood. Moreover such a policy would be greatly detrimental to the railways, to trade, to the working classes and to colonization. Let us see how. Such an export duty would prevent us from selling to the United States: 400,000 cords of wood equal to 800 000 tons of freight, representing in purchase price and in freight to the frontier, $7 per cord, $2,800,000 100,000 tons of pulp equal to 200,000 tons of freight representing in wood, labor, etc., freight to the frontier, $16 per ton, $1,600,000; total, $4,400,000.

But these figures, although representing a considerable amount, do not convey a fair idea of the uneasiness, the inconvenience, the detriment that such a new situation would cause to the railways by depriving them of 50,000 carloads of freight (a million tons); to the workmen hitherto employed in handling those 1,000,000 tons of freight; to the factories manufacturing those 100,000 tons of pulp; to the settlers who supply the 400,000 cords of wood exported and the 110,000 cords represented by the 100,000 tons of pulp also exported; to the pulp industry itself.

The settlers, the small farmers, would suffer the most from such a state of affairs, for they, both directly and indirectly, benefit the most from the exportation of our pulp-wood. Here is a proof of this: In 1903 and 1904 the province exported yearly 400,000 cords of wood, whereof 60,000 cords only were cut on Crown lands. The remaining 340,000 cords were taken from patented lots, from settlers' lots, etc. Of the 110,000 cords of wood required for the manufacture of the 100,000 tons of pulp exported to the United States, about three-fourths, or 82,500 cords, were also supplied by settlers. Thus, the latter sold 422,500 cords of wood, thanks to the exportation of this product, either in the raw or manufactured state. It is a considerable source of revenue on which they can rely and which enables them to clear their lots and provide for their subsistence. In winter they cut wood either on their own lots or on those of their neighbors; in summer they clear, burn over and cultivate their land. They remain on their lots and progress while the province progresses also.

What would become of these poor people were the Government to deprive them of this means of subsistence? Who would give them the $15 or $20 representing the value of the wood on an acre cleared by them, a sum which assures the family's subsistence?

Let us Encourage the Pulp Industry.

England consumes 450,000 tons of pulp yearly. We send about 75,000 tons, or seventeen per cent. of this quantity. We should send to the United States at least 300,000 tons of pulp; we send 100,000 tons. And yet we have the wood, the water-powers, the labor required for making pulp as cheaply as any other country. Canadian pulp is as good as Scandinavian. Instead of developing gradually, the pulp industry in Canada is at a standstill.

This is due to the following causes:

As regards the United States—The American Government imposes a Customs duty of $1.90 per ton on pulp coming from Canada. The rate of freight by rail is generally 20 per cent. higher for pulp than for wood. The installation of a pulp mill costs 30 per cent. more in Canada than in the United States. If the Canadian Government could—and it should do so for it is in the country's interest—either have such duty of $1.90 per ton removed or grant the Canadian pulp equivalent compensation; if it could compel our railways to stop charging that descriminating rate of 20 per cent. against our pulp and oblige them to carry pulp at the same rates as wood, we might treble our exports to the United States.

As regards England—England buys 75,000 tons of our pulp, and 350,000 tons from Scandinavia. Why should we not sell her the greater portion of those 350,000 tons? It is merely a question of freight. Scandinavia ships her pulp to England for $3 a ton less than we pay to send ours there. England buys in Canada only just enough pulp to establish competition between our country and Scandinavia, and to prevent a rise in prices.

If the Government would put us in a position to ship our pulp to England as cheaply as Scandinavia does hers, Canada would have a market there for 300,000 tons of pulp. This might be done either directly by means of an adequate export bonus, or indirectly by subsidizing a line of steamers for the purpose.

Moreover, France is already importing 200,000 tons of pulp, and there is no reason why Canada, in a near future, should not furnish most of that quantity.

Another fact worthy of consideration is that the demand for pulp both in England and France has been increasing for the last five years, and will most likely continue to increase at the rate of ten per cent. per annum.

Summary.

The extent and richness of our spruce forests are such that there is no danger of exhausting them if the cutting be judicially effected and if they be protected against fire. We should exploit that wealth in every way, that is to say, by making pulp-wood, pulp and paper. To that end, let us make all the paper we can consume here; let us do our best to treble our exportation of pulp to the United States, and to get possession of the English market; let us export as much pulp-wood as we can to the United States, to France and elsewhere.

It seems to us that our aim should be to export yearly 1,000,000 cords of pulp-wood and 600,000 tons of pulp. To obtain this result, which would contribute more than anything else to the development and general prosperity of the country, but above all of the Province of Quebec; which would make the pulp and pulp-wood industry our national industry, as it is the national industry of Sweden and Norway, the co-operation of the Ottawa and Quebec Governments is required. On the Provincial Government devolves the duty of protecting our forests, of regulating the cutting of timber, so that it may be done judiciously, and so that the forests may not be destroyed. On the Dominion Government devolves that of enabling us to build our pulp mills as cheaply as the Americans do; of regulating the freight rates for pulp on railways; of compensating us in some way for the duty of $1.90 per ton which the United States charge on Canadian pulp and for the $3 a ton which we have to pay over and above what it costs Scandinavia to get our pulp to England.

* * *

A Plea for Official Methods in Testing Ground Wood and Fibres.

By J. A. De Cew, Paper Mill Analyst.

From a Canadian standpoint, the title of this article is a name for something which does not exist. Perhaps the mere fact of naming it may assist in bringing to public attention the fact that there is something wanting which should be supplied. The want, however, is vividly impressed upon the man who, in the ordinary course of his business, is suddenly plunged in a controversy involving perhaps hundreds of dollars owing to a diversity of results in moisture testing. Of course, each man believes that his methods are quite correct, and seldom is willing to divide the difference. Perhaps after a joint test and mutual confidences in regard to each other's methods, each party is forced to admit that he cannot point out the error which caused the difference. Quite probably the local conditions will influence the joint test and minimize its value to the detriment of a satisfactory settlement.

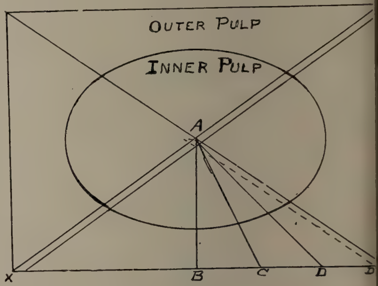
Now, the easiest way to settle a dispute is to prevent its occurrence, but when a controversy does arise the simplest settlement is obtained by referring the matter to some ultimate authority which is recognized as standard. Prevention is better than cure, however, and would not be very difficult to effect, providing everyone could adopt a uniform system of testing their ground wood or cellulose. This would be easy enough as far as general drying conditions are concerned, but not in regard to sampling, as the conditions at the manufacturing end and buying end are somewhat different. The manufacturer generally samples by taking a narrow strip the full width of the machine, at regular intervals. After that he probably stores it either loose or in bundles, and many conditions may arise which will influence the relative moisture contents of the pulp. Drying may take place in either warm or frozen weather, and when the pulp reaches the paper mill where it is to be consumed a method of testing must be adopted which will meet these conditions. When moist folded pulp is piled in stacks, the pressure of the pulp above has a tendency to produce an excess of moisture at the edges of the sheet. When the sheets have been in an hydraulic press the moist edges are very evident. Therefore, it is possible to find the outer pulp either dryer or wetter than the inner pulp, according to circumstances. Tests on pulp of this character may give different results, according to the method of sampling employed.

Now, if we find a method that will give as good results on this pulp as it would on fresh sheets, it should recommend itself very strongly to the man who wonders if he is buying water at so much per ton. It should also be worthy the consideration of the manufacturer, whose interest it should be to impress the trade with the reliability and accuracy of his tests.

Although the methods of pulp testing are still somewhat unsettled, yet there are some to which we can refer with considerable authority. In Journal Soc. Chem. Ind. of February 28, 1905, there appears an article by Mr. J. H. Lester, Part II., entitled "Moisture Tests of Wood Pulp.' The first part of this article appeared in the same Journal March 31, 1902, and in this the author describes very completely the reasons why he uses the wedge method of pulp sampling in preference to all others. In these two papers we have, from the pen of a recognized authority, sufficient evidence on which we might accept the wedge method when properly carried out, as being both reliable and effective.

Not long after the appearance of the first part of Mr., Lester's paper there appeared in "Paper and Pulp," May 15th, 1902, an article signed R. R. Tatlock & Readman—G. H. Gemmell. These chemists criticize Mr. Lester's method, and make the claim that a narrow strip sample taken diagonally across the sheet gives more accurate results than the wedge-shaped samples. Test results were given to prove their statement in which whole sheets were dried after the samples were taken. These results seem to indicate that the diagonal strips give better results in practice than the wedges, although the method does not lend itself so readily to mathematical proof.

Shortly after the publication of the article in ' Paper and Pulp" referred to, the present writer began a series of pulp tests in which both the methods mentioned were tried, along with the centre punch method. After several months of duplicate testing, the centre punch method was abandoned as worthless, for the results were found to fluctuate with the moisture condition of the inner pulp. When the outer pulp was drier the results were too low, and vice versa. The wedges and diagonals were then tried alternately for several months, and satisfactory results obtained by either method. However, much more care is required in taking wedge samples, as, if they are not taken accurately, erratic results may be obtained.



The wedge that should be taken is represented in the Fig. by the triangle A.C.D., the base of which is formed by dividing B.E.—one half the side into three equal parts, B.C., C.D., D.E. The wedge A.B.C. contains too much inner pulp, whereas the wedge A.D.E. contains too much outer pulp. Now, if the wedge A. D. E. becomes narrower at the base and broader at the apex until it contains about the right proportion of inner and outer pulp, it will have a strong resemblance to the portion of the diagonal strip A.Y., one edge of which coincides with the diagonal X.Y. Therefore, we may look upon the half diagonal strip as being a wedge whose sides are almost parallel.

We now have our choice between two methods of sampling which should give exactly similar results. Naturally we will be tempted to choose the one which recommends itself for symmetry and simplicity. This is without question the diagonal strip method, for it is much easier to say "corner to corner, one inch wide," than to describe with mathematical accuracy how the wedge A.C.D. should be taken. Fresh loose pulp, when sampled by this method, gives very good results with a moderate amount of samples, but if a car contains pulp lots of mixed ages, the accuracy of the test will depend upon a proper quantitative selection, the number of samples and the drying capacity of the oven.

The diagonal method has long been recognized and recommended by chemists of experience in pulp testing, as may be seen by referring to Mr. R. W. Sindall's article J.S.C.I., April, 1890. Thus, it is the desire of the present writer to add his experience to that of others and advocate the general adoption of this method by the Canadian manufacturers and consumers of ground woods and fibre because of its particular adaptability to the conditions of home trade.

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Rossed Wood Duty.

Decision of United States Board of Appraisers Reversed at Washington.

(From the Paper Trade Journal, N.Y.)

The unexpected action of the United States Treasury Department in notifying the collectors of customs to assess all importations of rossed wood at 20 per cent. ad valorem has aroused the indignation of the large consumers on this side of the border. The officials of each one of the big paper companies that draws its supply principally from Canada are considerably exercised over the new turn of affairs. All of them filed protests in the names of their companies against the collection of the duty. In addition to these protests there is now a movement on foot to make a joint protest to the authorities at Washington.

In the protest the main point that will be brought to the attention of the Secretary of the Treasury will be the fact that the delay in settling the controversy over the duty rests with the Government, as the case on appeal has been before the United States Circuit Court for over a year. It will be recalled that the United States Board of General Appraisers on March 31, 1904, rendered a decision in favor of the importers and against the assessment of the 20 per cent. duty that had been imposed under instructions from Washington. From this decision continuing the free entry of rossed wood the Government appealed in the early part of the following May. Since then the case has slumbered in the clerk's office at Burlington, Vt. Because of the delay of the Government to prosecute its appeal the paper manufacturers concerned took it for granted that nothing further would be heard of the case.

As the assessment of the duty was suspended pending a final decision there was very little interest in the case, the old arrangement of free entry continuing to the satisfaction of the American paper manufacturers. Now, after two years since the 20 per cent. duty was assessed, namely, June, 1903, the importers are suddenly aroused from their slumber by the instructions sent out by Assistant Secretary of the Treasury Reynolds to the collectors to assess rossed wood at 20 per cent. pending final decision by the courts. The revival of interest in the case, it seems, was due to the answer of the Assistant Secretary to an enquiry from the collector at Detroit, who happened to ask for instructions in regard to the duty on rossed wood. In order to answer the enquiry, it is surmised that Mr. Reynolds took a hasty glance at the records and wired the collector to assess at 20 per cent., the same being in accordance with the instructions sent out in June, 1903. In doing this Assistant Secretary Reynolds was following the usual procedure of the Government in collecting duties in all disputed cases pending the appeal. The importers, parties to the suit, say that the chances are that Mr. Reynolds overlooked the fact that the Government collected the 20 per cent. duty for only six days—June 3 to June 9, 1903—on the latter date informing the collectors to suspend its collection pending a decision by the Board of General Appraisers. When the board affirmed its free entry those interested did not expect to hear anything more of the case until the Circuit Court for the Northern District of Vermont should have rendered a decision.

One bad feature of the reimposition of the duty is the fact that, as the Government has already reversed itself once in the case, by putting on the duty and then, in a few days, taking it off, it is not likely to again reverse itself by withdrawing the instructions sent out July 10 by Assistant Secretary Reynolds.

As was said above, the officers of practically all the paper manufacturing companies in Northern Maine, New Hampshire, Vermont and New York are now in arms against the assessment of the duty. As the outlook for getting the order rescinded is not good, many of the manufacturers have already made arrangements to have their wood shipped in the rough with the bark on. But, although there seems little chance of continuing the free entry for rossed wood, the paper men concerned are not going to let the matter drop without first making a vigorous protest. The unfairness of their treatment at the hands of the Government is what they object to principally. The case, they say, should have been decided long ago if the Government really meant to try to collect 20 per cent. ad valorem on rossed wood on the ground that it was a manufactured article.

The Journal comments editorially upon the case as follows:—

The course of the Government in the matter of duty on rossed wood is decidedly erratic. In June, 1903, the Government placed the duty at 20 per cent. In March, 1904, the Board of General Appraisers, after an investigation, rendered decision in favor of the importers and against the imposition of the 20 per cent. duty. The Government appealed, the assessment of the duty being suspended pending final decision by the courts. That appeal has never been adjudicated, the Government simply not pressing the appeal.

Next the collector at Detroit asked for instructions as to the matter, and Assistant Secretary Reynolds instructed him to assess the duty at 20 per cent., action that at once stirred up those paper and pulp manufacturers who are using Canadian wood.

It is now two years since the rossed wood duty was first assessed, and it does seem as though in that period there had been ample time to reach a settlement of the question. The interests involved are large and important, and with the seesaw methods that have prevailed manufacturers are at a loss to know on just what basis they are working.

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CANADIAN FORESTRY ASSOCIATION.

The following circular has been issued by the above Association:—

All members of the Canadian Forestry Association are interested in the advancement of the movement for the systematic study of aboriculture and forestry in the Dominion and the adoption of such improved methods as may be necessary and feasible for the better preservation and management of the forests and for encouraging the planting of trees. It is not necessary to do more than point out the prominent position which Canada occupies in the world as a source of supply for coniferous timber, to the greatness of the business dependent upon forest products, to the large public revenues derived from this source, as well as to the influence of trees upon water supply, agriculture and irrigation, in order to emphasize the importance of the movement in which the Association is engaged.

Its importance is specially emphasized at the present time by the action of the Premier of the Dominion in deciding to call a Forestry Convention, which will meet in Ottawa on the 10th, 11th, and 12th January, 1906, to discuss the subject of forestry as related to the whole Dominion. This convention has also the strong support of His Excellency the Governor-General, who has kindly consented to accept the position of honorary president. The present is a favorable moment for bringing the Forestry Association before those who are likely to become interested, with the object of increasing the membership and extending the sphere of the Association's influence.

It is therefore considered advisable to repeat the effort to increase the membership which was made last year, and it is requested that you will assist in this work by sending to the secretary of the Association the names of any persons who might be induced to join the Association if the nature of its work is explained to them.

R. H. CAMPBELL,
Secretary.

Those who wish to join should address R. H. Campbell, Secretary Canadian Forestry Association, Department of the Interior, Ottawa. The membership fee is only $1 a year, and this includes a copy of the Association's journal, issued quarterly.

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The Pulp and Paper Question

By J. C. Langelier, Chief of Forest Rangers of Quebec.

(Continued.)

What we have done with farm products — cattle, cheese, butter, eggs, wheat, flour—we can do with pulp and paper if the Dominion Government, for comparatively a few years, will only give a helping hand to the accomplishment of this evolution. Let the Government guarantee to the owners of the mills actually in operation a premium on the exportation of their pulp or paper, and they will go through the crisis resulting from the closing of the American market without any serious trouble, and with the certainty of being amply recouped in three years of the new régime, just as it has happened with regard to farm products.

The Position of Settlers and Timber Landowners.

In the raw and under the form of pulp we export to the United States about 600,000 cords of pulp-wood. The British market would readily absorb that quantity in the form of chemical and mechanical pulp, so that by securing that market through the premium system our pulp-wood makers would not suffer by the change. The only difference would be that, instead of shipping their wood to mills in the United States, they would sell it to mills operating in Canada. On this point James McKinnon, general manager of the Eastern Townships Bank, has given the following evidence before the Colonization Commission at Quebec:

Q. Would you be in favor of an export duty on pulp-wood as a means of encouraging and developing the pulp and paper industry in this Province?"

"A. I certainly would.

"Q. In the Eastern Townships—take the townships in the counties of Compton, Sherbrooke, and so on—if there was an export duty put on pulp-wood do you think it would stop altogether the manufacture of pulp-wood in that district?

"A. No, sir; I do not.

"Q. Are you of opinion that the local mills would increase their production? Would paper and pulp mills of that district, being so protected, increase the consumption of that timber and take all that is manufactured just now and sent to the United States?

"A. I think it would have the effect of making all these pulp and paper mills increase their capacity. That should be done. I am quite sure that if the present mills have not the capacity to take it now, that they would be enlarged or other mills built that would take it. Of course, it would depend altogether on what the export duty would be.

"Q. But if there was a high enough export duty, you feel confident that the manufacturers would take advantage of that to increase their production of pulp?

"A. I am sure of it. If the duty were high enough, it would simply induce some of those mills on the other side of the line to move over here.

"Q. Do you think that on the River St. Francis and other rivers there are water-powers enough to build pulp and paper mills to consume all that pulp-wood?

"A. Oh, I think so. There is no question about that.

"Q. Would you, in case there would be some objection to an export duty on pulp-wood, favor the granting of a bounty on paper manufactured in Canada and exported abroad?

"A. Yes, I would favor any policy that would build up our industries here, and instead of simply sending our wood across the line to be manufactured there, and employing skilled and expensive labor, I would be in favor of having that done here, and it should be. I think legislation should be such as to encourage that industry here.

"Q. With the system of railways that you have through the Eastern Townships, in every direction, even if the mills of that region were not sufficient to take all the pulp-wood that can be manufactured, are you of opinion that it could be very easily shipped to other Canadian mills?

"A. I should think so. The railway facilities are very good, you know.

"Q. So that you are of opinion that the export duty, one way or another, would not affect the settlers in the sale of their pulp-wood? They could find a market for it just the same?

"A. I think so. I think that after a year or two there would be no question about that."

This fairly answers the objection that stopping the exportation of pulp-wood to the United States would deprive a part of our population of the means of living they find in the making of pulp-wood for exportation. Mr. McKinnon lives in the Eastern Townships. He knows the situation, the wants of his fellow-citizens. He is interested in the welfare and prosperity of the inhabitants of that district, and none could express on this point an opinion deserving more consideration.

What the Dominion Government Would Have to Pay.

Our American cousins being rather ticklish in these matters, the premium should be paid only on pulp or paper manufactured in Canada and exported to countries outside of North America, in order to give them no chance to complain or retaliate, and to show them clearly that we can do without their market, that we can force some of our manufactured products upon them without the help of legislation and premiums.

Besides the 600,000 tons of pulp and paper which we could sell in the United Kingdom, we could easily dispose of 150,000 tons in France and Belgium, two important markets, which should not be neglected. Then there are the markets of Japan, China, Australia, New Zealand, South Africa, Mexico, and the western coast of South America. Japan probably furnishes the greatest possibilities, the imports of paper and pulp approaching $3,000,000 a year, and the demand increasing very rapidly. The Australian market is still more important, and would readily take from us between $4,000,000 and $5,000,000 paper yearly. Australia has no wood suitable for making pulp, and no water-powers, so that it has to depend exclusively on other countries to get its paper. It was noted a few years ago that a considerable portion of the paper imported into Australia from Great Britain and the United States was manufactured from pulp shipped from Eastern Canada.

It should be easy to place on all those markets 750,000 tons of pulp and paper, which, at a premium of $3 per ton, would represent $2,250,000 per annum for the premiums payable by the Canadian Government.

What Would be the Compensation?

Geo. Chahoon, manager of the Laurentides Pulp and Paper Co., is an American who has a large experience in the manufacture of pulp and paper in the United States, and an expert in this line of business. In answer to questions asked by the Quebec Colonization Commission, he wrote the following answer:

"Suppose a cord of wood is worth $3.50. When exported out of the country all the benefit Canada derives is from the amount of labor expended in cutting this wood and the stumpage paid the Government. By converting this into mechanical pulp, it means an additional expenditure of about $7 per cord for both labor and material, all of which can be obtained and produced in Canada. By converting a cord of wood into chemical pulp, it means an extra expenditure of about $15 is made for the material and labor. All of this labor, and all material except sulphur, which comes from Sicily, can be produced in Canada. By converting these pulps into paper you have a finished product worth $40 at least, and the difference between $3.50, the value of the original cord of wood, and $40 is all for labor and material, the most of which could, and would be, manufactured in Canada, were the business sufficiently large. All this is in addition to the large amount of capital which would be invested in limits, water-powers, mills and machinery."

On the average, it takes about 1¼ cords of wood to make a ton of paper of ordinary quality, as stated by Mr. Chahoon in another answer, and it may be fairly assumed that the 750,000 tons of pulp and paper which would be exported yearly under the premium system would represent 937,500 or 1,000,000 cords of pulp-wood.

Now, let us compare what this same quantity of wood would bring to us Canadians if exported to the United States under the present conditions, to what it would bring under prohibitive duties or the premium system.

As far as can be ascertained, our exports of pulp-wood and wood-pulp to the United States are about in the following proportions: pulpwood, 75%; mechanical pulp, or ground wood, 20%; chemical pulp, 5%; viz., 750,000 cords of wood, 200,000 cords under the form of mechanical pulp or ground wood, and 50,000 cords under the form of chemical pulp. Taking for a basis of calculation the figures given by Mr. Chahoon, the result of the present system of exportation to the United States would bring to us the following sums of money:

750,000 cords of pulp-wood @ $3.50 per cord	$2,625,000

160,000 tons of ground wood @ $10.00 per ton	1,600,000
40,000 tons of chemical pulp @ $18.50 per ton	740,000
	$4,965,000

Under the premium system the same quantity of pulp-wood, or 1,000,000 cords, could be transformed into the following quantities of manufactured and finished products and exported:

150,000 tons of paper @ $40.00 per ton	$6,000,000
100,000 tons of chemical pulp @ $18.50 per ton	1,850,000
500,000 tons of mechanical pulp @ $7.00 per ton	3,500,000
	$11,350,000

This comparison shows a difference of $6,385,000 a year in favor of the premium system.

Would it not be a good policy to pay $2,250,000 a year in premiums to get in return $6,385,000 in wages?

To this should be added the earnings for transportation companies. As all that pulp and paper would be shipped by ocean navigation, it would add 750,000 tons to our shipping trade. And our railroads would have the whole of the land transportation, instead of only a small share, as now, the balance going to American railroads. And there would be also the increase in our machine shops to manufacture machinery for the pulp and paper mills which would pay a couple of million dollars a year for work and wages.

Are not these results worth fighting for, even at the cost of two or three million a year paid in premiums, for ten or fifteen years? "I am sure," wrote J. R. Booth to the Colonization Commission, "it would be worth far more to the country than the bounty paid on iron."

Behold the illogicalness of our policy. We pay large bounties to encourage the production of iron, an industry for which we have not all the raw material required, which compels us to import a large percentage of ore from the United States, Spain and Newfoundland; an industry also whose products we cannot have any serious hope of exporting to foreign countries. We also bonus the production of lead, an industry of comparatively minor importance in all respects, and when it comes to the manufacture of pulp and paper, an industry whose elements—wood, materials for making acids, and water powers—we possess in a degree not to be equaled in any other country in the world, we hesitate to take the means to start it. We go bowing and scraping to the American trusts and monopolizers as if we were in sheer distress and in the absolute impossibility of doing anything without them. Is this the way New Canada—the Canada of the Twentieth Century—should proceed in this matter?

Our Governments have voted and paid over $50,000,000 to help the construction of railroads destined to facilitate our trade with the United States and develop our farming industry by securing for its products the American markets. When this was done our American cousins put up a barrier to exclude those products from their markets. After spending $50,000,000 in vain attempts to secure a market which failed us at last, why should we hesitate to spend half that sum to secure markets which we are sure to get?

(To be Continued.)

Forestry and Pulpwood

The Miramichi Lumber Company has been organized at Portland, Me., to do a general lumber business in New Brunswick and elsewhere with $400,000 capital stock, of which $900 is paid in. The officers are R. C. Bradford, of Portland, president; Chas. E. Oak, of Bangor, treasurer.

Herr A. Scheck, who was for years in charge of one of the forests of Hessen-Nassau, Prussia, and who has been sent out to Canada by the German Foreign Office to examine the pulp resources of Canada, is now in British Columbia and will return east next month. In an interview he said that Canada had enough pulp-wood to supply the world forever. The pulp-wood consumed in the German Empire, he says, has come in the past from Norway and Sweden, but the resources of those kingdoms are becoming exhausted, and as a result the German Government is looking for a new source of supply. For the past three years Herr Scheck has been studying the forests of the United States and submitting reports thereupon to the German Government, and he is now making similar investigations in Canada.

Thomas Southworth, Director of Forestry for Ontario, recommends that counties and townships in the Province establish municipal forest reserves, and that as a preliminary measure looking toward the creation of small municipal reserves in settled districts possessing areas of non-agricultural or inferior land, he suggests that the Assessment Act be amended so as to allow townships to hold, in perpetuity, lots purchased at tax sales. He also advises that before any new township is thrown open for settlement the surveyors be instructed to report as to rough and non-agricultural land embraced within its boundaries, with a view to withdrawing such areas from settlement and retaining them as timber reserves. The surveyors should be instructed to have special regard to the location of such non-arable or poor lands as regards streams and water-courses as an important factor in deciding whether such land should be reserved or thrown open for occupation.

The annual meeting of the New Brunswick Lumberman's Association held its annual meeting on the 25th ult. in St. John, when the following officers were elected: President, W. B. Snowball, Chatham; vice-president, George McKean, St. John; committee, Kilgour Shives, Restigouche; T. M. Burns, Gloucester; Hon. Allan Ritchie, Northumberland; J. D. Irving, Kent; F. W. Sumner, Westmorland; C. T. White, Albert; Henry Hilyard, St. John; J. A. Gregory, Charlotte; S. H. White, Kings; Fred. E. Sayre, Sunbury; Mr. Baker, York; M. Welch, Carleton; T. Lynch, Victoria; John E. Moore, Madawaska. R. A. Lawlor is secretary. Fifteen new members applied for admission and were accepted. Respecting the leases, most of which expire in about ten years, the lumbermen represent that inasmuch as they have to the present time been judiciously operating on the timber lands, cutting where the timber is fully grown and not destroying the younger tracts, it would be of advantage not only to the lumbermen themselves, but to the province generally that an extension of existing leases be granted so that it will be unnecessary for them to cut down within the next few years the timber that, because it is not fully grown, ought not to be cut within the life of the leases. This they would naturally do unless they are willing to bid high prices against speculators when the lands next come to be let. If an extension is granted, they say, the young forests of the province will be more economically preserved. They also urged on the Government more care in the granting of lands for settlement, many having got hold of lands just to speculate in the lumber. They will also make an attempt to get the mileage reduced.

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PERSONAL.

M. F. Cummings, of the Belgo-Canadian Pulp & Paper Company, of Shawinigan Falls, was in New York and Paterson, N.J., his former home.

F. Becker, the well-known London pulp agent, has been paying a flying visit to Canada. Mr. Becker was in Montreal and Ottawa a few days in company with his Canadian agent, Mr. Ryrie, of the Ryrie Paper Company, Toronto. He returns to England by the turbine steamer Virginian.

T. V. Bowater, a member of the London City Council, has been elected one of the Sheriffs of London, a high civic honor. Mr. Bowater is senior member of the firm of W. V. Bowater & Sons, of London, importers and exporters of paper and paper materials. This well-known firm is represented in Canada by John Christie, Toronto.

C. M. Kittson, Canadian Commercial Agent in South Africa, reports from Cape Town that a good demand for Canadian paper and wrapping paper could be established if proper representation methods were adopted and export quotations compared favorably with those of present suppliers.

On the occasion of starting work at Sturgeon Falls on the 1st inst., on the Ontario Northern and Temagami Railway, the first sod was turned by O. Aubin, M.P.P., on behalf of the Government, and John Craig, managing director of the Imperial Paper Mills, was called on to turn the second sod on behalf of the railway.

A. W. Donly, Canadian Commercial Agent at Mexico City, writes: Wood pulp is used here, to a greater or less extent, in the manufacture of the cheaper grades of paper. The supply, up to the present, has come principally from Norway, Sweden and other European countries, with some from the United States. As Canada exports this article in large quantities to both the United States and Europe, she should certainly be able to supply Mexico with what she requiries of it.

R. W. Sindall, F.C.S., of London, Eng., wood pulp and paper mill chemist, some of whose contributions have appeared in this magazine, has been asked by the Indian Government to proceed to India in October next to investigate the possibilities of wood and other fibres for the manufacture of paper pulp. Mr. Sindall spent two years in Canada examining the wood pulp industry on behalf of an English firm, and has had good opportunities of investigating the whole problem.

An interesting event took place last month in connection with the business of Joseph Porritt & Sons, of Helmshore, near Manchester, makers of the celebrated "Arrow" brand of felts for pulp and paper mills. The employees and tenants of the firm to celebrate the marriage of O. W. Porritt, which took place on the 26th July, presented that gentleman with a massive silver tray, the exact fac-simile of the one presented by the corporation of Liverpool to Lord Kitchener. A large number attended the presentation, which was made through S. Pilling, the commercial manager, and which was striking evidence of the good relations existing between Mr. Porritt, as one of the members of the firm and the employees. The local papers give a full report of the event with illustrations of the plate. Mr. Pilling, who had been in the firm's employ for 37 years, referred to this as only one of a number of gifts to heads of the firm showing the esteem of the employees.

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NEW COMPANIES.

Farmers' Advocate of Winnipeg, Winnipeg, capital $100,000; J. Weld, Jos. Weld, J. C. Snell, London, Ontario; W. E. Gunn and A. G. Hopkins, Winnipeg, Manitoba, are members of the company.

Falcon Press, Toronto, has been granted a charter, with a capital of $20,000; K. Wheeler, G. H. Wheeler, S. Wheeler, H. E. Redman and G. H. D. Lee, Toronto. This firm will carry on business as printers, engravers, binders, etc.

The Preston Progress Printing Co., Preston, capital $20,000, has been granted a charter, incorporating T. H. Arntfield, Hespeler; F. Clare, C. Dolph, J. E. Koltz, O. Homuth, Preston; into a company, to carry on the business of newspaper proprietors and general publishers.

Archibald W. Smith and Partners, Toronto, capital $20,000; incorporating J. A. De Camp, New York; A. W. Smith, A. M. Wickens, H. Gearing, A. Beaton, Toronto, have been formed into a company to carry on the business of printers, advertising contractors and publishers.

Mill Matters

At the convention of Boards of Trade of the Maritime Provinces, held at Yarmouth this month, a topic that will be brought up by the St. John Board is the question of the prohibition of the export of pulp logs.

The paper trade in Toronto has been somewhat hampered by a strike which developed out of the refusal of the employing printers to recognize the union of the lithographic transferers and printers. All the large lithographic printing firms were affected and it is charged that the strike came out of the interference of unions in the States.

A correspondent signing himself "Anglo-Canadian" writes a letter to the World's Paper Trade Review, in which he says: "I am one of those who believe that we shall have to look more and more to Canada for our supplies of paper and pulp, and it is reassuring to find that a great firm like the Harmsworths are taking such a step as this (the enterprise in Newfoundland), which I venture to think will do more to attract other investors to pulp and paper schemes than anything has yet done."

J. C. Wilson & Co., Limited, papermakers, Montreal and Lachute, have opened a branch at Vancouver.

The agitation against the Harmsworth deal appears to have somewhat subsided in Newfoundland. The St. John's, Newfoundland, Herald, says of it: In considering the relation of the Harmsworth land to the future of the colony, it must be remembered that the rights enjoyed by these capitalists over the lands recently demised to them are not nearly so great as those which Mr. Reid enjoys over the lands he holds throughout the colony, for his lands were granted to him in fee simple, with practically no reservation, while the Harmsworth lands are held under lease subject to a variety of restrictions from which the others are necessarily exempt. The London agitators are either ignorant of this or are suppressing it, and the local critics also seem to overlook it.

The main building of the Caritte-Patterson Manufacturing Company's tarred paper factory at Halifax was destroyed on the 3rd inst.

The municipality of Dryden, Ont., has granted exemption from taxation in favor of the Dryden Board Mills, whose pulp mill has been in contemplation for some time past.

Th Canada Coating Mills Company, Limited, are pushing construction on their new mill at Georgetown, and hope to make a start by the end of September. The motive power is steam and the initial production of the mill will be six to eight tons of coated paper per day.

John Fisher & Sons, of Dundas, Ont., has applied to Judge Magee for an injunction to restrain the town from diverting the water in a stream which flows through Fishers' property, and furnishes the paper mills with power. The town wants to put a four-inch pipe in the stream to pour the water into the reservoir, as the water there is getting low. The firm maintains that such an action would deprive the mill of its water supply.

The Canada Paper Company, through their solicitors, have written the Toronto Board of Control asking a definite answer as to whether their lease of city property west of the Custom House on Front Street would be renewed for 21 years. If so they were prepared to re-build at once. This is the property which the Dominion Government may want for its proposed new post-office. The city has been unable to get a definite answer from the Government.

The Sault Ste. Marie Pulp & Paper Company is now turning out 100 tons of ground pulp per day, and could sell more if it had the capacity. The company is now considering an extension to the ground wood plant. Sulphite pulp is not now being made, but it is intended to start it later on in connection with a new paper mill. The next annual statement will show that the net earnings of the pulp mill will be over $100,000.

It is reported that the International Paper Company, of New York, have bought the Royal Paper Mills Company's property at East Angus, Que. As some timber land goes with the mills it is likely the report will prove to be correct.

George Murray Publishing Co., Montreal, have been incorporated with a capital of $650,000; G. Murray, R. Reid. W. H. Drummond, H. Desbarats and W. Stewart, Montreal, are members of this company, which will carry on the business of a printing, publishing, lithographing, etc., company.

Large additions are being planned for the mills of the Brompton Pulp & Paper Company, Bromptonville, Que. These additions are to give a greater output of pulp and were contemplated in the original plans. C. W. Rantoul, formerly of the Imperial Mills, Sturgeon Falls, now of the firm of C. W. Rantoul & Company, New York, has been appointed selling agent for this mill, the output of which is 125 tons of dry ground pulp per day.

The British Newfoundland Syndicate, Limited, has been registered in London, England, with a capital of £12,600. Its object is to adopt an agreement with H. J. Crowe, "to acquire and deal with real and personal property of all kinds in Newfoundland or elsewhere, and to carry on the business of explorers, timber estate owners, miners, prospectors, farmers, paper manufacturers, wood pulp manufacturers, dealers in paper-making materials of all kinds, timber and lumber merchants, shipowners, contractors, etc." No initial public issue. Registered without articles of association. Registered office: 44 Gresham Street, London, E. C.

Wm. R. Perrin & Co., manufacturers of pulp and paper presses, have moved into a new factory at 530 King Street East, Toronto. The new buildings were constructed for their work, the main structure being 64 x 112 feet. The shop is equipped with cranes and all modern appliances for handling heavy work and is well lighted and arranged. All heavy work is handled on the ground floor. Blacksmiths' shop and pattern shop are to be erected. The office is finished in weathered oak and the same kind of wood is used in the furniture. The motive power is supplied by a gas engine of 21 horse-power. This firm manufactures hydraulic presses for all purposes, also screw presses and packing house machinery, etc. It recently shipped a large hydraulic pump to the St. George, N. B., Pulp & Paper Company, of St. George, N. B., to operate pulp presses at a pressure of 5,000 pounds to the square inch.

With regard to the formation of the syndicate of pulp-wood and lumber interests in Newfoundland, mentioned last month, it is stated that the area of pulp land affected is about 1,650,000 acres. The companies merged into the syndicate, to be known as the Anglo-Newfoundland Development Company, having a capital of one million pounds sterling, are: The Reid Newfoundland Company the Exploits Lumber Company, the Newfoundland Timber Estates Company, and the New Land, Lumber and Pulp Company. Public opinion in the Island seems favorable to this deal as the syndicate is expected soon to begin the erection of pulp mills, and later on paper mills. The deal was arranged through Henry Judson Crowe, vice-president and general manager of the Newfoundland Timber Estates, Limited, who was met in Montreal by Henry M. Whitney, president of the Newfoundland Timber Estates, and Directors Captain J. H. Williams, president of the Newland Lumber & Pulp Company; A. F. Taylor, president of the Exploits Company, also with his directors. B. F. Pearson, M.P.P., also attended the meeting as secretary and director of the Timber Estates Company, and in a legal capacity. It was stated that one of the English members of the syndicate is already the owner of four or five paper mills, and that contracts have already been signed for a good portion of the output which will within two years reach two hundred tons of paper per day. Mr. Crowe proceeds to Newfoundland to forward matters.

As already announced, F. W. Bird & Son, of East Walpole, Mass., are building at Hamilton a Canadian branch of their paper mills. This firm was established in the States as long ago as 1817 and were the pioneers in roofing paper in that country, the "Paroid" and "Neponset" brands, made for many years by this firm, being a standard for comparison. Having already considerable direct trade in Canada the firm decided that it could be extended by having a Canadian branch and decided on Hamilton as a good location for the factory. The firm acquired eight acres in the eastern part of the city, and are now putting up buildings, one of which is 140 x 60. The structures are frame with stone foundations and concrete floors. The buildings and plant will cost $18,000 or $20,000, and 200 hands will be employed. The firm manufactures at East Walpole roofing papers, sheathing and insulating papers, tarred papers, hardware wrapping papers, and tack box paper, all of which will ultimately be made at the Canadian branch. For the present, however, the mill will be chiefly devoted to building papers. It is expected that one of the paper machines will be ready for operation about October. The firm is represented in Winnipeg by Coltard, Cameron & Company, who had a large display of these goods at the Winnipeg Exhibition. The manager of the Hamilton mill is W. R. Hardy, and the office manager C. H. Stearns.

The Imperial Paper Mills of Canada, Limited, have asked the town of Sturgeon Falls to formally assent to the agreement for exemption from municipal taxation being bound to include the name Northern Sulphite Mills of Canada, Limited, in which name, for convenience, the company desire to construct the new sulphite mills. The company have employed Alex. Hamilton, of Warren, as manager of the woods department. Mr. Hamilton is well-known as a successful manager of lumbering operations.—Sturgeon Falls Advertiser.

The Windsor Locks, Conn., plant of the American Writing Paper Company, known as the Windsor mill, made a new record last week in turning out 448,800 pounds of paper, an average of 37 tons for each 24 hours. The plant is closed Saturday and Sunday nights but is kept in continuous operation during the balance of the week. The work was done under the supervision of Supt. J. P. O'Brien, who is recognized as one of the most expert papermakers in the country. The mammoth mill, which employs over 180 hands, was built under his direction and is modern in every detail. What makes this item (from the Hartford, Conn., Globe) interesting to Canadians is the fact that J. P. O'Brien is a Canadian who was for a number of years superintendent of a Canadian mill. He has also on his staff a number of Canadians, one of whom is from Toronto, C. Nelson Gain, son of Thos. Gain, wholesale sales manager for Douglas & Ratcliff Company, paper dealers, Toronto. Our Canadian boys appear to succeed in other lands as well as at home.

Stetson, Cutler & Company are unable to state just when work will be commenced at the Mispec mill, for there is a lot yet to be done before the plant is in proper order. It is the intention of the company to practically double the capacity of the pulp mill, and for this new machinery has been ordered. Some of it has already arrived and is being set up, while more is to come. The greater part of the wood to be used will be brought from Musquash and down there a long chute is being built from the lake to the landing place. At the lake a plant will be installed for cutting the pulp wood into the required lengths.—St. John Sun.

A Salvation Army correspondent of the War Cry sketches Sturgeon Falls and its paper mill thus: Sturgeon Falls is a young town full of energy and possibilities in virile New Ontario. It takes its name from the picturesque falls of the Sturgeon River which, four miles below, empties itself into Lake Nipissing. Lumbering is the chief industry of the surrounding district, and the fine paper mill which employs 465 men is the chief support of the town. It started as a pulp mill, saw some ups and downs, but now has developed into a magnificent paper mill, working day and night to put out the demands made upon it. The picture of the interior view of the finishing room show a little of the magnitude of the mill. Building is still going on and the new dam which is in course of construction will furnish enough water in the winter to keep the mill going every day, whereas during the past winter owing to shortage of water, it was working only half-time. Sergeant-Major Johnston, who works in the paper mill, took the writer through the works after the meetings, when we observed the raw wood going through the process of grinding and refining, until it became the finished paper. The town is now in its boom days. New buildings are seen in course of erection everywhere, and among them are many substantial brick structures. The C. P. R. has, during the last year built a pretty new station. Sturgeon Falls has a very cosmopolitan population. There is a goodly mixture of the sturdy French-Canadian, who is the expert in the lumber trade; the English, Scotch, and Irish, of course, are well represented, together with Swedes, Norwegians, Danes, Finns, and Chinese.

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GRAND FALLS PULP AND POWER DEVELOPMENTS.

Of the power developments at Grand Falls, N.B., which include pulp and paper mills, referred to in this magazine the St. John Telegraph says: The projected enterprises at Grand Falls grow in importance.

Attorney-General Pugsley, who has returned from a visit to New York and Ottawa, had in the former city a conference with the men who are back of the development of the water power at Grand Falls. They visited him in New York and as this is a matter in which the people of the Province are deeply interested he had no objection to giving a Telegraph reporter information he had gathered in New York.

The gentlemen connected with the enterprise, he said, stand very high in financial circles in New York and, from the best information he could obtain, he had no reason to doubt that they would be able to raise all the money required.

Their plans contemplated the harnessing of the water power at Grand Falls, which will give a minimum of about 60,000 horse-power and a maximum of about 300,000. The promoters had been induced to take hold of the enterprise by reason of having made discoveries of large deposits of bog or wad iron or manganese in the Province and the invention of a process of treating this ore by electricity which, after long continued and expensive experimenting carried on for the past two or three years at Shawinigan Falls, Que., had proven entirely successful.

They intend to establish at Grand Falls works for treating the ore electrically and so manufacturing ferro-managanese—a very valuable product. The company also contemplate the supplying of Grand Falls and other towns along the St. John River with electric energy for lighting and power purposes. They intend bringing the power as far as the city of St. John. Although the expense of doing so will be very great, yet, by reason of the enormous power which can be developed, they feel quite certain of being able to supply the citizens with electrical power at a much cheaper rate than that which has to be paid for power from coal.

A part of their plan, also, is to acquire the International Railway between Campbellton and Grand Falls and operate the road by electricity.

They also intend to erect pulp and paper mills with capacity of 600 to 800 tons a day and which, he believed, would be the largest mills of the kind in the world.

The operations of the company, if successfully carried out, would mean the employment of several thousands of people and would give an immense

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"IDEAL" PISTON PACKING

For all steam pressures, and also for water, oil, air, ammonia and other general uses.

The Ideal Packing consists of two wedges backed by a soft oil cushion. Its principal features are the construction of the wedge section and the oil cushion. These wedges are made of a high grade fine woven cotton, duck and rubber, and have interposed between their adjacent surfaces a thin strip of soft anti-friction metal, which renders the adjustment of the wedges sensitive, positive and easy with the least possible pressure on the gland. The backing or oil cushion is made of an asbestos core over which is braided wire covered strands, which add considerable strength and prevent the fibres being separated when subjected to pressure. The packing is coated with best foliated graphite.

LARGELY USED BY PULP AND PAPER MILLS

THE CANADIAN FAIRBANKS COMPANY, Limited

MONTREAL TORONTO VANCOUVER WINNIPEG

impetus to the industrial development in the northern section of the Province, while the St. John valley, including the city of St. John, would feel the beneficial results of the development which would be thus brought about.

The Attorney-General said that the carrying out of the plans would involve an expenditure of probably $10,000,000. Some details were yet to be arranged but he believed there would be no difficulty in regard to these. The capitalists interested in the enterprises seem to be entirely satisfied with the legislation the Government has promoted, he said, and felt that the undertaking would offer profitable employment of capital. Operations are to be commenced.

The PULP & PAPER TRADING CO.,
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DEALERS IN
Paper and Pulp of All Kinds.
Prices and Samples on Application.

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FOURDRINIER WIRES
CYLINDER MOLDS, DANDY ROLLS
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Brass, Copper and Iron Wire Cloth
SOLE MANUFACTURERS OF THE
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F

U.S. IMPORTS OF PULP AND PAPER STOCK.

Trade returns from Washington show hat the United States imported paper tock from Canada in the year ending une, 1905, to the value of $162,673, com- ared with $144,823 in 1904 and $98,828 n 1903. The imports of pulp into the Jnited States in these three years were s follows:

	1903. Tons.	1904. Tons.	1905. Tons.
ermany	13,783	9,104	6,994
ther Europe..	21,113	34,277	29,628
. N. America.	81,985	101,415	130,882
Totals . . .	116,831	144,796	167,505

	1903. Values.	1904. Values.	1905. Values.
ermany ...	$611,449	$401,449	$350,508
th'r Europe	909,298	1,384,648	1,469,904
N America	1,867,023	1,816,571	2,680,543
Total ..	3,387,770	3,602,668	4,500,955

* * *

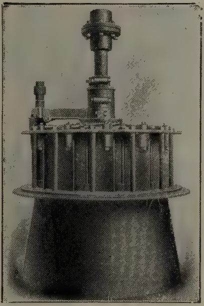
RAG AND PAPER STOCK MARKETS.

Montreal, 18th August.

There is a continued firmness on the narket for all kinds of paper stock. Mixed cotton rags have been selling at 1.40 to $1.50, and stocks held are maller than is usual at this time of the ear. Manilla rope has advanced $2 to 3 per ton. Bagging is scarce and very rm. Wash papers, which were slower o move than other stocks, are now in etter demand; no advance as yet in rice.

o. 1 white shirt cuttings	$5.25	to	$5.75
ight print cuttings	4.00	to	4.50
nbleached cuttings	4.50	to	5.00
hite shoe clips	4.00	to	4.50
olored shoe clips	2.75	to	3.25
omestic white cottons..	2.25	to	2.50
lues and thirds cottons.	1.40	to	1.50
oofing stock	.60	to	.70
aste papers	.30	to	.35
anilla rope	2.12½	to	2.25

The Samson Turbine



We have supplied many of our Samson turbine water wheels to pulp mills for direct connection to grinders, for driving beaters, and, in fact, for all power purposes.

The Samson has an even and regular speed under all changes of load, ensuring better and more even quality of pulp and an even output from the paper machines.

Of course the work placed on a water wheel when used for this purpose is very trying, but the Samson has never yet failed, under even harder conditions.

It also costs less per horse power than any other turbine.

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F

PULP AND PAPER MARKETS.

The sulphite market of Canada is steady, and there is a prospect of better prices. The demand is very good and seems likely to continue so.

Ground wood is quiet, and prices are about the same as last month. There is complaint of low water in the country on the north of the St. Lawrence. Of interest to the trade is the export business that is now beginning to be developed in new quarters in the European market, as noted elsewhere.

The manufacturers of soda fibre met a few days ago in New York but did not change prices.

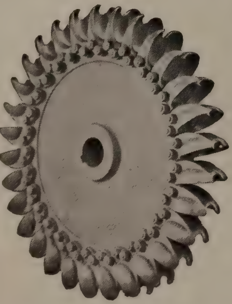
Of the New York market the Paper Trade Journal of the 10th says: While there is plenty of pulp to be had at something like $21.50 delivered, still the market seems somewhat firmer than it has been, owing to the 25 per cent. duty on imported rossed wood, together with the collection of the countervailing duty of 25 cents per ton on ground wood coming in from Canada. Because of the assessment of duty on rossed wood, the paper manufacturers who use Canadian wood are considerably disturbed, as it means an increase of $1.10 per cord on their wood, the logs being assessed at a value of $5.50.

The importers and dealers in wood fibres this week report a little more inquiry for stocks. In the domestic fibres there has been little change, the unbleached continuing somewhat unsteady, and the bleached fairly firm. From now on an improvement in the demand is looked for. In regard to soda pulp, the same thing is true. Concerning the foreign fibres, it is said that the unbleached continues scarce and high in price. The bleached sulphite remains comparatively quiet. The market abroad shows a tendency to higher prices. Quotations in New York are: Sulphite, foreign bleached, ex dock, 3¼ at 3.35; unbleached, ex dock, 2.15 at 2½; sulphite, dom. bleached, 2¼ at 2¾; unbleached, 1¾ at 2.10; soda, domes. bleached, 2.15 at 2¼; soda, foreign, unbleached spruce, ex dock, 2.35 at 2.40; bleached, ex dock, 2.90 at 3.20.

The British Consul-General at Christiania reports that the stocks of both mechanical and chemical wood pulp in Norway are at present very low. Norway's production of wood pulp in the last three years is estimated to have been as follows:

1. Chemical wood pulp, calculated dry.

	1902.	1903.	1904.
	Tons.	Tons.	Tons.
Cellulose sulphite	93,000..	96,000..	105,700
Cellulose sulphate	9,000..	9,500..	16,700



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WORTHINGTON TURBINE PUMPS.

Baker and Shevlin Screens, Etc.

John McDougall Caledonian Iron Works Co., Limited, Montreal, Exclusive Licensees in Canada.

2. Mechanical wood pulp (for sale), calculated wet:

1902. Tons	1903. Tons.	1904. Tons.
326,000	313,000	290,000

The anticipated production in 1905 of mechanical wood pulp is estimated at 290,000 tons.

Complaint is still made in Norway and Sweden of low water. According to a Swedish paper the French market was last month reported to be invaded by an energetic seller, who was everywhere predicting lower prices for mechanical pulp both for this and next year, and offering to book contracts for Canadian pulp at much lower prices than Scandinavian mills would entertain; it appears that the British market is now favored with a similar visitation. Sales of this Canadian pulp are reported to have been made for delivery from now onwards till the end of 1906 at prices equalling about 35s. 6d. f.o.b. Scandinavia, and offers on about this basis seem to have been spread all over the market. The natural effect of these offers has been to weaken the ideas of British buyers, and they are now still less inclined to pay what Scandinavians ask for next year, i.e., about 38s. to 40s. f.o.b. for unwrapped pulp. Offers from this side at rather less than 38s. f.o.b. have recently been refused by Scandinavian mills, who seem to be remarkably firm and united at present in regard to the prices they maintain both for this and next year; they report that they have good inquiries from the Continent.

Chemical pulps remain firm and in strong demand. Strong sulphites are selling at about £8 f.o.b. over 1906 alone, but less is being accepted for longer periods.

Farmand (Christiania) reports: "At the meeting of the Traemasseforeningen last week it was reported as an illustration of the general position of the market that 2,500 tons mechanical pulp, ordinary brand, have lately been sold at a

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IT gives FULL DETAILS regarding—

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Pulping Engines and Kneaders

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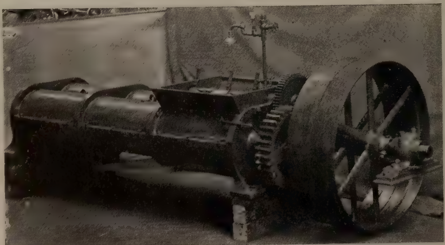

Three Segment Pulping Engine—Trough 800 and 2,000 lbs,

Nearly 150 at Work. 3

These Machines, with the same power, do from TWO to FOUR TIMES the WORK of STONES, without Shortening, Affecting, Creasing, or Wetting the Fibre in any way, or Changing the Colour or the Sizing.

Beaters not required in making Boards from Old Paper Stock.

Can be used for Kneading Clay and other fillers, as well as for Kneading Dry Bleaching Powders, instead of the Bleaching Mill.

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ENGLAND. 3

price of kr. 34 net, f.o.b. (unwrapped), for June-July shipment. There are several inquiries in the market for large quantities for 1906; but sellers are at present not inclined to accept buyers' bids. We have heard of the refusal of a bid December, 1905-June, 1906, 700 tons monthly at a price of kr. 33-25 net, f.o.b. (unwrapped). A number of smaller orders for delivery over the autumn 1905 at a price of kr. 33 net, f.o.b. (unwrapped), have also been refused." "Paper Making" of August 1st reports of the British market that stocks of rags and paper stock are seriously decreasing, and that chemical pulps are firm and scarce in quantity.

According to the statistic report of the Fraemassefareningen, dated July 1st, there were scarcely any stocks left, the unsold quantity for delivery this year being also a very small one.

London quotations are: Pine, dry, £4 7s. 6d. to £4 17s. 6d.; pine, 50 per cent. moist, £2 12s. 6d. to £2 17s. 6d.; Brown, dry, £4 7s. 6d. to £5; brown, 50 per cent. moist, £2 5s. 0d. to £2 10s. 0d. (c.i.f. London or Manchester).

* * *

It is reported at Chatham, N.B., that the American syndicate which has purchased the holdings of the Richards concern will, in the near future, commence the erection of another sawmill at the old Morrison place at Clark's Cove, about a mile above Chatham, and that a pulp and paper mill will also be built.

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Paper Machines,
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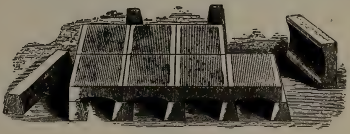

Save your stock and temper by using the Klary & Snell Patent Drainer Stones. They are the only drainers that give satisfaction.

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Importers and Exporters.
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140 Nassau Street, New York City.
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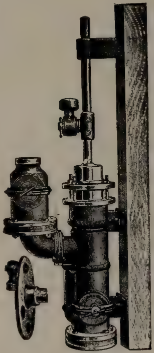
—We understand that Zapon, the new preservative of paper products of Dr. Schill, of Dresden, is a solution of nitrated cellulose in some inexpensive solvent, amyl acetate seeming to be the best adapted for paper in sheets. When dipped in the solution or brushed with it, the paper absorbs the liquid, and on evaporation of the solvent becomes coated with a thin film, which resists rain, sweat and various fumes, as well as attacks of mold and bacteria and hard usage. The treated paper, unaltered in appearance, may still be written on with ink or pencil.—Papermakers' Monthly Journal.



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This pump is made in three sizes, 5", 6" and 8".

The valves are made so as to be easily and cheaply replaced and can be got at without using wrench.

We also make boiler feed and other pumps.

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PRESSES, HYDRAULIC or KNUCKLE JOINT.

Heavy Duty Pulp and Baling Presses.

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Soda Ash 58 per cent.
Bleaching Powder 35-38 per cent.

SOLE AGENTS IN CANADA
Winn & Holland = = Montreal

A Washington despatch says: The demand for foresters is increasing rapidly, both for State work and with private owners. Many States now have forest commissions, and several of them have State foresters. A trained forester at $2,400 a year and two assistant foresters at $1,200 each are wanted by California. Wisconsin wants an assistant forester at $1,500, Indiana a forester to take charge of its State reserve, and Washington offers $1,800 a year for a trained forester. In many other States the advisability of creating the office of State forester has been under discussion this year, and it is only a matter of a few years when such an official will be considered a regular part of an efficient State Government. The demand for foresters by private timber owners is growing at a still more rapid rate. During the last twelve months seven of the Bureau of Industry force have left to take up work with such

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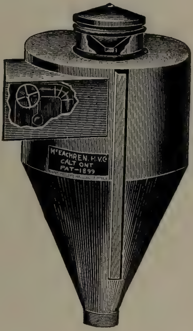

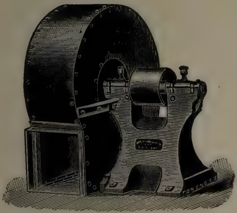

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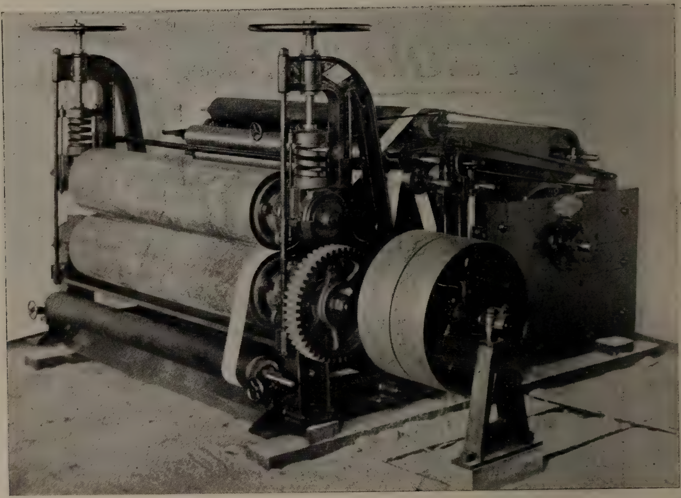

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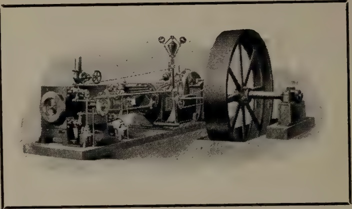

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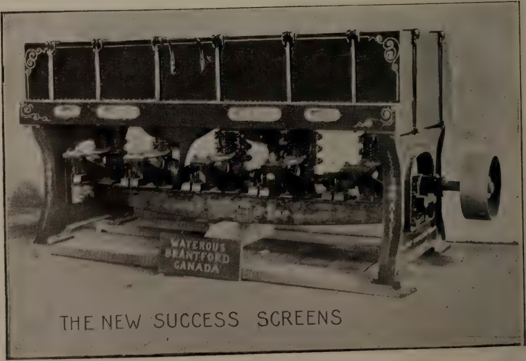

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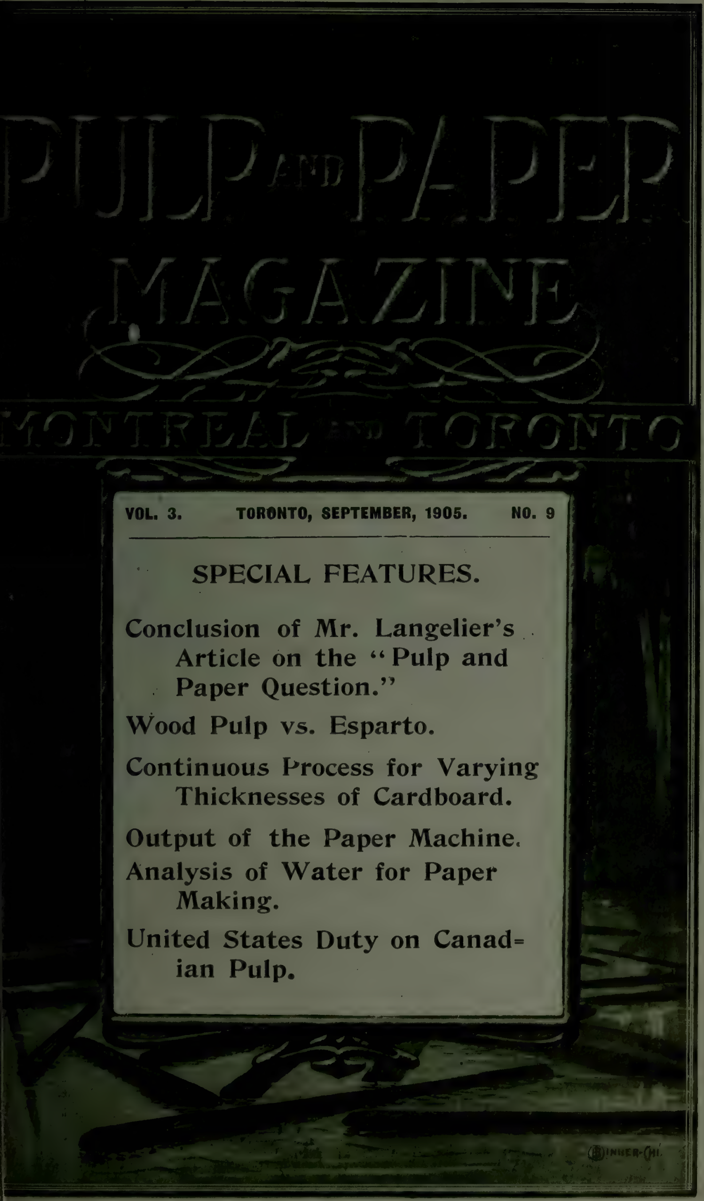

PULP AND PAPER MAGAZINE

MONTREAL AND TORONTO

VOL. 3. TORONTO, SEPTEMBER, 1905. NO. 9

SPECIAL FEATURES.

Conclusion of Mr. Langelier's Article on the "Pulp and Paper Question."

Wood Pulp vs. Esparto.

Continuous Process for Varying Thicknesses of Cardboard.

Output of the Paper Machine.

Analysis of Water for Paper Making.

United States Duty on Canadian Pulp.

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INDEX TO ADVERTISEMENTS.

Atterbury Bros. 43
Beloit Iron Works 49
Benson & Co., W. T. 10
Bentley & Jackson 4
Bertram's, Limited 6
Black-Clawson Co., The 7
Bowater & Sons, W. V. 52
Bredt & Co., F. 10
Brunner, Mond & Co., Limited 44
Canada Paper Co. 51
Canadian Fairbanks Co., Limited, The 37
Canadian Rubber Co. of Montreal 8
Carrier, Laine & Co. 48
Castle, Gottheil & Overton 9
Cheney-Bigelow Wire Works 38
Christie, J 52
Christie, Limited, George 3
Cousland & Co., A. 10
Davis & Co., F. H. 43
Dean & Son, Limited 41
Eastwood Wire Mfg. Co 2
Emerson Mfg Co 37
Freese, Jean 3
Hamilton Mfg. Co., Wm 39
Hardy, George F. 9
Hawksworth & Sons Co., Limited, Alfred 12
Hay Knife Co., Limited, Peter 38
Hough, R. 52
Huyck & Sons, F C 5
International Pulp Co. 9
Jenckes Machine Co., Limited 12 & 50
Johnson & Sons, Limited, C. H 6
Kenyon & Son, James 45
Klipstein & Co., A. 11
Kimball, Herbert S. 9
Knight & Co., John 47
Lea & Coffiin, and H. S. Ferguson 9
Little & Walker 9
McDougall Caledonian Iron Works, The John 40
McOuat & Son, T. 44
Paton, Thomas L 3
Perrin & Co., Ltd., Wm. R. 44
Porritt & Sons, Joseph 10
Porritt & Sons, Limited, Samuel 52
Porritt Bror. & Austin 6
Pringle & Son, T. 9
Pulp & Paper Trading Co., The 38
Pusey & Jones Co 42
Quebec & Lake St. John Ry. 9
Seymour & Guest 9
Sheldon & Sheldon 47
Smith Co., S. Morgan 51
Snell, Co., Samuel 43
Sullivan & Co., C. F. 10
Union Screen Plate Co 3
Union Sulphur Co., The 45
Vogel, C. H 9
Wallace-Jaastad-Drewson 44
Want Advertisements 40
Waterous Engine Works Co., Ltd 50
Wertheim & Co., A. 46
Whittaker, Richard 11
Wilson, Paterson & Co. 12
Winn & Holland 44
Wurster, Dr. C. 42
Young, J. S. 51

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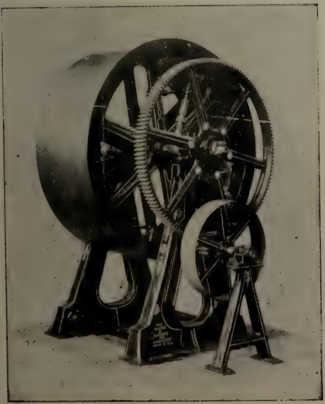

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NEW PAPERMAKING MATERIAL.

United States Consul Griffith, writing from Matamoras, Mexico, says:

Interest has been created in this district by the suggestion that the fibre of the papaya, commonly known as the Mexican papaw, would probably afford an admirable material for the manufacture of high-grade paper. The fibre in question is the full length of the tree trunk and appears to be quite strong and rather silky in texture. With the exception of the bark and a small pithy heart, the trunk is composed entirely of this fibrous material. Some samples of the fibre have been sent to an American paper expert and manufacturer with the purpose of having it tested with reference to its adaptability for the manufacture of the higher grades of paper. The plant grows rapidly, attaining a diameter of from 2 to 3 inches when 1 year old. It requiries no special care nor cultivation and grows luxuriantly on either the sandy or black waxy soil of this region. Although known as the Mexican papaw, it is claimed that the papaya is not indigenous to Mexico, but was brought to this country originally from the Moluccas by the Spaniards, a fact well worth noting, for if it proves to be anything like as good a papermaker as its friends urge it might be tried in Florida and California. To judge from its appearance, it seems probable that no decorticating machinery would be required in its treatment, as the fibrous material is devoid of woody elements to all appearances.

* * *

An annex is to be built to the Cushing Pulp Mill, St. John, to be used as a dry house and for log cutting purposes.

A report was in circulation a few days ago that the Royal Paper Mills had been purchased by the International Paper Co., and that the paper mill as well as the company's pulp mill had been started up. Whatever negotiations may be afoot as to the purchase of the mills, the paper mill is still closed down.

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THE
PULP AND PAPER MAGAZINE
OF CANADA

VOL. 3.—NO. 9. TORONTO, SEPTEMBER, 1905. {$1 A YEAR.
SINGLE COPY

Pulp and Paper Magazine

A monthly magazine devoted to the interests of Canadian pulp and paper manufacturers and the paper trade issued between the 15th and 20th of each month.

SUBSCRIPTIONS: Canada, Great Britain and the United States, $1 a year; to Foreign Countries, 5s. a year.

Changes of advertisements should be in the publishers hands not later than the 10th of the month, and, where proofs are required, four days earlier. Cuts should be sent by mail, not by express.

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PUBLISHERS
62 CHURCH ST., TORONTO.

PRINTED AT THE OFFICE OF THE MONETARY TIMES PRINTING CO., LIMITED, TORONTO, CANADA.

THE SITUATION.

The reader will find in this issue the concluding instalment of Mr. Langelier's paper on the pulp and paper problem of Canada. It is one of the ablest and most comprehensive reviews of the situation that has ever been published, and the author has presented the political as well as the industrial and commercial aspects of the subject in a clear and graphic manner. The array of facts and arguments furnished by Mr. Langelier complete the answer to the theories of Mr. Dubuc, whose pamphlet was reprinted in our last issue. The quotations Mr. Langelier makes from Mr. Dubuc's evidence before the Colonization Commission of Quebec are a confutation from Mr. Dubuc's own mouth of the arguments he now advances in favor of getting rid of our pulp-wood to the advantage of the paper industry of other countries.

It is also an answer to the bluff of certain United States interests when confronted with the probabilities of a new departure in the pulp and pulp-wood policy of Canada. The Paper Mill, of New York, for example, on learning of a proposition to put an export duty on Canadian pulp as well as pulp-wood, says:—"Of course it is only unofficial talk, but it shows the temper of the Canadians toward the United States. With natural resources beyond measure, or even estimate, at its disposal, the Dominion appears unable to carry on the work of industrial development on its own merits. If money is needed, it should be secured without much difficulty upon a proper business showing. If skill or experience are required, they can be had at the market price, just across the border. It should be purely a business matter, to be adjusted on business methods, without recourse to fourteenth century procedure. Moreover, the sooner the Canadians realize that they can do no good for themselves nor harm to the Americans, by the adoption of any restrictive policies, the sooner they will be able to get down to business in the development of their own industries. That the wood pulp resources of this country are by no means exhausted, and are in no immediate danger of becoming exhausted, is well known on this side of the line, although the fact is ignored north of the St. Lawrence. There is plenty of spruce in this country, out of reach perhaps, at present, that will be made available when it is needed. In the meantime, we are buying more or less of Canadian spruce as a matter of convenience, but not of necessity."

This horse-trade style of argument is not likely to mislead many people on this side the border, and shows a misconception of the position. The United States manufacturers buy Canadian wood neither wholly for convenience nor of necessity, but because it costs them less than to get at their own supplies. They privately admit what they do not care to publish, that without supplies of Canadian wood their business would be paralyzed, and the cost of manufacturing would be so raised that they would get into trouble with the publishers at home, and would be unable to ship to foreign countries on the scale they are now doing.

We do not suppose any demand is likely to be made for an export duty on Canadian pulp under any circumstances, but when our friends across the line talk of "restrictive policies," it is well to remember that of all the restrictive or exclusive legislation on the statute books of both countries from the early navigation and trade laws down to the alien labor law, there is no instance in which Canada has been the aggressor. They have all been of United States design, and have arisen from United States initiative, while the Canadian laws have been in self-defence or retaliation. United States trade, tariff and commercial restriction laws can all be crystallized in one idea, "sell everywhere, but buy nothing." Practice proves the idea impossible, and when our neighbors get back to the give-and-take principle, a pulp and paper trade system between the two countries can be arranged.

Meantime let us again try to rid the minds of our United States friends of another serious misconception,—namely, that Canadians propose an export duty on pulp-wood for mere selfishness or spite. It is true we wish to build up the pulp and paper industry for which nature has so well fitted us, but the restriction or prohibition of the export of pulp-wood will not be adopted wholly because of this ambition, but because the unregulated devastation of our forests that has been going on in Quebec and other provinces will, if continued, endanger our water-powers, and bring desolation to our farms, as it has done in Mesopotamia, in Spain, and even in parts of the United States. It is therefore a question of self-preservation, no of retaliation, with Canada.

* * *

At the annual meeting of the Cornwall Paper Manufacturing Co., held a Cornwall, Ont., the statements presented regarding the company's business gave general satisfaction. The following board of directors was re-elected:—M P. Davis, Ottawa; S. Greenwood, Col. R R. McLennan, J. A. Cameron, R. J Pitts. C. P. Derochie, E. H. Brown.

Pulp & Paper Currency

According to the unrevised monthly returns compiled at the Customs department at Ottawa, the pulp-wood shipped from Canada to the United States for the year ending June amounted to 593,624 cords, valued at $2,600,814. This is by far the largest export of pulp-wood officially recorded, but the actual quantity which goes out every year to the United States is much greater than the official returns of either country show.

United States trade returns for the first seven months of 1905 show a development of the paper trade of that country, the exports of paper being $4,987,222, or a gain of $434,190 over the same period of 1904. The shipments to Canada are reported to be $1,258,274 as compared with $1,096,924 in the seven months of last year. In the seven months of the past three years the United States imported from Canada rags and paper stock as follows: 1903, $61,419; in 1904, $90,886; in 1905, $99,011. United States imports of pulp from Canada in the seven months of last year were 55,762 tons, valued at $1,040,760, but for the same period of this year they have risen to 68,550 tons, valued at $1,460,463, or a little more than half of the value of United States imports of pulp from all countries of the world. Norway with 17,162 tons, and Germany with 4,064 tons rank next to Canada as a source of supply to United States mills.

Quoting an article on the pulp-wood question from the Pulp and Paper Magazine, the St. John Telegraph says: "Those who object to the placing of an export duty on Canadian pulp-wood suggest another means of 'fostering' the pulp industry which appears to be about equally objectionable. This is that the Government subsidize freight steamers to enable Canadian pulp makers to compete with Scandinavian pulp in the European market. Also, according to the Ottawa Free Press, 'a bonus of $3 per ton has been suggested.' But subsidy and bonus are only makeshifts. The natural market is growing, and it will be better than the artificial one proposed. It is estimated that if one-tenth the pulp-wood now cut in this country were turned into pulp here the Dominion would gain more than it would by exporting the whole cut. A policy of forest preservation and the utilization of the water-powers would enhance the great advantage Canada already has in the extent of her woodlands. The world outside faces a wood famine in view of the tremendous and rapidly increasing demand for pulp-wood. An immense development of the pulp and paper industry in Canada, therefore, is certain. A wise government may do much to promote the growth of pulp making; but it will not go extensively into the bonus business."

A good testimony to the value of Canadian spruce for pulp making comes from Canada's principal competitor in the pulp trade. Mr. Sontum, the Canadian Commercial Agent in Norway, writes: "A short time ago there arrived from Canada a shipment of thirty standard logs, which have been made into pulp at one of the Norwegian pulp mills. This was an experiment to find out whether the reason that the Norwegian pulp has been considered of a finer quality than the Canadian pulp lies in the quality of the wood or in the grinding. The result has shown that the pulp made from the Canadian logs is of excellent quality. This is of considerable importance for the Norwegian industry, the Canadian raw material being much cheaper than the Norwegian, and when the quality is equally good, if ground in the same way, it is feared that the Norwegian pulp industry will get a very strong competitor in the Canadian pulp."

Although the paper making fibres of Japan, such as the Mitsumata and Kozu, are remarkable for the production of papers of strong texture, which are turned to account in so many ways by the ingenious Japanese, that people have not succeeded in producing a paper for its daily newspapers on a scale cheap enough to compete with imported wood pulp paper, because Japan has not enough pulp-wood forests. This defect may be remedied by the acquisition of the island of Sakhalin, whose mountainous districts are clothed with spruce forests, and have considerable water powers. These, the enterprising Japanese will, no doubt, turn to account in establishing mechanical pulp mills, but it is a question whether Sakhalin could supply more than a fraction of the requirements of the country, and meantime a market exists there for wood pulp and cheap papers which Canadians may supply. Japan imports yearly about $2,000,000 worth of paper, and about $600,000 worth of pulp. A special agent of the United States Government, in advising his people to cultivate that market, gives a hint on methods of shipping to Japan. Printing paper is shipped frequently by Americans wrapped in coarse wrapping paper only; at other time with crates in addition; rarely in boxes. Boxing was preferred in the past by the Japanese, but the English have perfected a bale which is now preferred and the Japanese will have paper in no other way. The bale is made up by first wrapping heavy wrapping paper around a ream of paper, and incased in a stout burlap. On the bottom and top of this are placed 1-inch boards nailed together by three cleats of 1-inch stuff, over which pass three heavy iron straps. This is then all encircled by a fourth heavy iron strap running lengthwise.

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THE CUSHING SULPHITE FIBRE CASE.

On the 13th inst., Judge McLeod, of St. John, N.B., sitting in chambers, decided to postpone the sale of the Cushing Sulphite Fibre Co.'s mill, from the 16th September till the 1st November. The motion to postpone the sale was supported by the Attorney-General and Mr. Cushing's lawyers, and was opposed by the lawyers representing the trust company and the sulphite fibre company. The arguments pro. and con. dealt with legal forms and procedure. In giving his decision Judge McLeod said he only had power to adjourn a sale under a foreclosure order when the circumstances were exceptional, and as he thought the announcement of the sale was short, and as the directors seemed to be in sympathy with the bondholders, the case had sufficient special features to warrant him in interfering. He therefore compromised the matter by postponing the sale, authorizing the referee to adjourn the sale by proper notice and to sell the property on the 1st November.

During the argument Mr. Powell stated that the mortgagees had already taken possession of the property and intended to retain possession. The judge intimated that if they did so they would have to account for their stewardship. Mr. Powell said that his clients would meet this difficulty when confronted with it.

The Attorney-General disapproved of the way the business of the company had been managed since the mortgagees entered into possession. He understood that the profits for the three months amounted to about eighteen thousand dollars, which money had been devoted to paying off claims of the Bank of Montreal and interest on bonds held by Capt. Partington. This money should have been divided among all the creditors, big and little.

Forestry and Pulpwood

The loss by the destruction of Price Bros.' mill and wharves, with woods, etc., at Metabechouan last month, is about $40,000, largely covered by insurance.

Owing to drought in New Brunswick, it is estimated that 15,000,000 of logs are held up on the St. John River between Fredericton and Grand Falls, but it is hoped that much of this will be released by the heavy rains which fell from the 12th to 14th inst. The total amount of logs rafted is 62,850,000, of which 53,613,000 are spruce.

R. H. Campbell, secretary of the Canadian Forestry Association, has visited Toronto and Hamilton, and other points to interest the people of Ontario in the forestry congress to be held in Ottawa on the 10th, 11th, and 12th of January. The discussions at the convention will be divided into three main branches, as follows:—Forestry in relation to the state; forestry in relation to agriculture; and forestry in relation to the lumbering and pulp and paper industries. The convention will be the most important, as it bids fair to be the most successful in point of attendance, of any yet held in Canada.

The Bayless Pulp & Paper Co., of Binghampton, N.Y., has concluded a deal with the Seminary of Quebec, a very old Catholic institution, for the purchase of three thundred square miles of spruce timber land on the River St. Anne, thirty miles from Quebec. The deal involves nearly $1,000,000 of purchase money, and the expenditure of several hundred thousand more very soon for the establishment of pulp mills. The Seminary of Quebec received its charter for this property over three hundred years ago from the king of France, and it was later confirmed by the English.

At the annual meeting of the Trois Pistoles (Que.) Pulp & Lumber Company last month the following officers and directors were elected for the year: President, E. W. Tobin, M.P.; vice-president, Fred. S. Morse; secretary, J. A. Begin; treasurer, R. T. Wells. The company has two mills producing spruce lumber and cedar shingles.

James Robertson, of Glencoe, who has been at the head of a surveying party in New Ontario, reports that a fire has burned over the whole of Hyslop and Guibord townships, and parts of Playfair, Beattie and Carr Townships. The timber was mostly pulp-wood. The fire is thought to have started from the camp-fires of railway survey parties.

On the whole, the United States seems to be more disturbed by the new pulp-wood duties than does Canada. They want our pulp-wood, and if they cannot get it will have to buy our pulp to a greater extent than in the past. The legislators of Quebec should not change their policy of endeavoring to build up the pulp and paper manufacturing industry, but should go a step farther than they have and prohibit entirely the exportation of pulp-wood. Perhaps the little disturbance which the new duties have caused may lead to legislation beneficial to Canada.—Canada Lumberman.

A. P. Lowe, of the geological survey, Ottawa, has returned from a three months' trip through the district northwest of Lake St. John as far as Lake Chibougamou, where valuable deposits of asbestos have been discovered. Mr. Lowe found that the deposits in question are of considerable extent and value. Quartz gold claims have also been located. The difficulty in developing these resources is that there must first be railway communication to get the minerals to the market and to enable supplies to be brought in. Lake Chibougamou is two hundred miles distant from Lake St. John towards James Bay. It is 1,000 feet above the level of Lake St. John. Mr. Lowe reports that the region is heavily wooded with spruce, suitable for pulpwood. There is good arable land in some parts.

* * *

PERSONAL.

Hugh J. Chisholm, president of the International Paper Co., returned to New York from his European trip, on the 29th ult.

James Beveridge, manager of the Miramichi Pulp & Paper Co., of Chatham, N.B., is now on a trip to England.

J. R. Clarkson, superintendent of the Cushing Sulphite Fibre Co., of St. John, N.B., is returning from a trip to the Old Country.

A. W. Playfair, of Windsor Mills, Que., has severed his connection with the Canada Paper Co., and leaves for Japan this month, having accepted a position as teacher of English in a Japanese school.

* * *

PRINTING AND PUBLISHING NOTES.

The Hough Lithographing Company has been incorporated at Toronto with a capital of $40,000 to carry on the business of lithographing, electrotyping, printing, etc. The members of the company are: J. Miln, H. Hough, R. Miln, A. Miln, and J. Miln, all of Toronto. The company will take over the lithographing business established by Henry Hough, under the same style.

The Carbon Paper and Ribbon Manufacturing Co., Toronto, $40,000; J. M. Ferguson, J. W. McDonald, H. V. Ferguson, J. J. O'Sullivan, J. D. Woods, Toronto, directors, has been incorporated to carry on business as printers, lithographers, etc., also to deal in carbon paper.

The Niagara District Printers' and Publishers' Association has issued invitations to the employing printers of Ontario to attend its annual meeting at St. Catharines, September 28th and 29th. The second day's proceedings will include a trip to the four paper mills of the neighborhood, the Montrose, the Riordon, the Lincoln, and the Kinleith, and Carl Riordon, of the Riordon Mills, will read a paper on "Plup and Paper."

* * *

The result of the investigation into the charges made against Herman Felsing, superintendent of the Menzie Wall Paper Co., New Toronto, for breach of the alien labor law, was a fine of $50 and costs for each of the five cases brought against him. Mr. Felsing had gone to New York and contracted for workmen to take the places of those on strike.

A special meeting of the Western Canada Pulp & Paper Co. was held in London, Eng., on the 2nd ult., Wm. C. Ward, presiding. Mr. Wood made a clear and frank statement of the company's initial difficulties, and spoke of the agitation that had been raised against it by some of the British Columbia papers, fromh which one would gather that the Provincial Government had given the whole country to the company. The controversy, however, was a testimony to the value of the property, and he was convinced that the company had a better proposition than the prospectus showed. It remained to be seen how many of the dissentient shareholders at home would take advantage of the technicality raised in the courts to repudiate their subscriptions of stock; but they would give the larger shareholders three weeks in which to make up their minds as to whether they would take up the subscriptions dropped by the dissentients. Meantime surveys had already been undertaken in British Columbia preliminary to taking over the property of the company.

The Pulp and Paper Question

By J. C. Langelier, Chief of Forest Rangers of Quebec.

(Concluded.)

Particular Reasons for Adopting that Policy.

Outside of those considerations there are particular reasons which should nduce us to adopt this policy. North of the height of land, Ontario and Quebec possess a vast country abounding in pulp-wood and water-powers. As long as we depend on the United States markets, we shall never succeed in utilizing those resources. Those spruce orests are too remote, too far from the mills of New England and New York, o allow the shipping of wood pulp, and even the production of pulp for the American market would be overtaxed by the excessive cost of transportation. In New Ontario there is enough of wood o make upwards of sixty million tons of paper; in New Quebec there is enough to make ten times more. All this is worthless under the present conditions, whilst it could be utilized and profitably exported under the premium system. The Canadian Pacific and especially the new Transcontinental Railway, which will run through that district, would get a large traffic in carrying pulp and paper manufactured in New Ontario and New Quebec to the Pacific Coast, whence those products would be shipped to Australia, Japan, China, the West Coast of Mexico and South America. There is an abundance of good farming lands in that district, and the climate is good; but settlement will be slow as long as there are no manufactures to impart life to it. Without this incentive immigrants and settlers will of preference go farther west and locate in the prairies and wheat lands of the Northwest.

Is the settlement of that northern district not worth the sacrifice of a couple of million dollars a year for a few years? Have not the capitalists who invest millions in the Grand Trunk Pacific a right to expect that consideration from the Government? The industry started by the guarantee of a premium on the exportation of pulp and paper will create as by magic villages and towns, around which farming will soon develop.

What Should be Our Policy ?

This is clearly traced out by Mr. Booth in his letter to the Colonization Commission. "You ask me," he says, "to give you my opinion regarding the prospects of the pulp and paper industry in the Province of Quebec, and while I would be glad to give my opinion on the matter, I feel the pulp and paper industry to Canada, and particularly the Province of Quebec, is of such vast importance that I do not feel able to point out the great future before it if it is properly handled. With our unlimited spruce forests, our greatest water-power in the world, and our various means for making acids, we should become the paper makers for the world. But that we can never be so long as we permit our raw material to be exported to a country that shuts us out of their market by a protection so large that we cannot compete with them in paper, and we cannot ship them wet pulp owing to the freight on water. They will not buy dry pulp, and our own markets are not large enough to induce capitalists to put up extensive plants in Canada. So must we continue to get out pulp-wood at $3.50 or $4.00 per cord for export, until our Government adopt some policy whereby we can convert our wood into paper, and instead of bringing back to our country $4.00 per cord for wood we could bring back $35.00 to $40.00 per cord for it if made into paper.

"If we cannot stop the exporting of our pulp-wood, could we not put an export duty on it high enough to stop it? Or if this cannot be done would it not be a good investment to our country if the Government were to give a bounty of $5.00 per ton on paper manufactured in the Province, the same as they do for iron? I feel sure it would be worth far more to the country than the bounty paid on iron. Surely our Government can, and should, find some way, either by prohibiting the export of pulp-wood cut from Government lands, or by an export duty, or by a bounty sufficient to meet the duty on pulp or paper which would tend to build up one of the greatest, if not the greatest, industry in this country. No country in the world has such an opportunity to build up a lasting and profitable industry, and no country has the water-power, the spruce forests or the intelligent labor that we have. It is well known that the Americans have no sentiment in business. They will go where they can make the most money. If conditions are so that they can do better in Canada than in their own country they will come here, and we have the all-powerful influence of the press to help us: and it is not the making of paper alone I have in my mind, but the making of the machinery as well. Our machine shops would also be increased proportionately."

The Premium Policy.

All considered, the policy of paying a bounty on the importation of pulp and paper is by far the best. It will interfere neither with our present trade in pulp-wood nor with the exportation of pulp to the United States; it will not in the least affect the present conditions of the pulp industry as far as the American market is concerned; it will not embroil us with our neighbors either in fiscal or political matters; it will give them no cause whatever to complain, and it will secure for our manufacturers markets which they can never get without this help. The demand for pulp-wood for home consumption will be more than doubled, and this increase in the demand will of necessity cause an increase in the prices; and, being no more at the mercy of our American cousins, we will be in a position to dictate our terms. We will enjoy the same advantages for the sale of our pulp. When the American paper-makers hesitate to pay fair prices for it our manufacturers will be able to ship to Great Britain, France, Belgium and most probably to Japan. These circumstances will force a rise in the price of pulp and paper in the United States, and make this market of much easier access for the products of our pulp mills.

The impetus thus given to the pulp and paper industry would be equally felt by colonization. There is no industry which contributes more directly to the advancement of colonization than that of the manufacture of pulp. The settler, to clear his land, is obliged to cut down and burn large quantities of spruce and balsam trees too small to be used for saw-logs, but most suitable for pulp-making. In the districts where pulp mills would be started settlers would have a ready sale for that small timber and earn money in clearing their land, while actually it is costly to them to do away with this wood. It is therefore easy to consider the impetus colonization would receive by the pulp industry, and looking at the latter from this point of view, it may well be called a national industry of an importance worthy of the attention of all promoters of colonization.

There is another reason which is not out of place in the discussion of this important question. Until the introduction of wood paper Great Britain occupied the first place in the manufacture of paper. The making of paper from wood has altered the circumstances, and materially affected the position of the British paper makers. The bounty system, such as exposed above, would change this state of things and again place Great Britain at the head of the list in the paper industry by procuring for the British manufacturers pulp at prices which would enable them to compete successfully with the United States and Scandinavia, not only in their own markets, but also on those of foreign countries. And when Old England, like a good mother, takes so readily our farm and fruit products free of duty, why should we hesitate to undergo a little sacrifice to secure for her the benefit of converting our pulp into paper and secure employment for all her large paper mills? This would be only the continuation of the preferential policy adopted by our Government with regard to the motherland, and in this case our Canadian industry would surely have nothing to lose and much to gain.

* * *

Continuous Process for Any Thickness of Cardboard

An English patent has been granted to H. D. Loria, a French engineer, covering a "method of apparatus for the continuous manufacture of cardboard." In his specification the patentee says:

It has already been proposed to manufacture cardboard by superposing sheets or webs of paper pulp which bind themselves together when passed through the press. But in order that this binding action may be spontaneously produced as it were, it is necessary to employ sheets only incompletely formed and extremely wet, containing about 85 per cent. of water. These sheets have almost no cohesion, so that it is indispensable to superpose them immediately on their delivery from the machines with rollers or with flat tables by which they are formed. It is necessary then to have as many machines of this kind as there are of sheets or plies to be superposed, which reduces to very narrow limits the number of sheets which it is possible to superpose in practice. This number is equally limited by the fact that it is impossible to pass to the press without crushing and destroying them, a sufficient number of sheets in sufficiently wet condition. This process, therefore, is not well adapted for the manufacture of thick cardboard. For thin cardboard it is not economical by reason of the multiplicity of machines necessary and it does not give good results, for the sheets have so little resistance that they frequently tear although supported by felts. Moreover, the drying of such cardboad is very costly by reason of the great quantity of water to be extracted; for the same reason the cardboard produced is wanting in resistance and compactness. The method and machine forming the subject of this invention render possible the continuous manufacture of cardboard of all thicknesses by the superposition of undried webs of pulp while avoiding the drawbacks above indicated. To this end, therefore, instead of employing, as has been done heretofore, webs of pulp incompletely formed, containing about 35 per cent. of water, I superpose webs completely formed, containing about 35 to 50 per cent. of water only; the said webs are not subjected to any preliminary drying operation, for it is easy to obtain them directly on flat table machines for instance. Heretofore it has not occurred to anyone to adopt this method of producing cardboard, and that because webs in this condition do not bind together on simply being passed through the press. I have, however, observed, and this is an important feature of the invention, that the binding effect is easily produced at the time of passage through the press if the webs be powdered or sprinkled with a dry powder such as flour or dry glue, or paste in powdered form. At the time of passage through the press the moisture in the pulp is absorbed by the paste, renders it adhesive and so cements the webs together. This effect is then obtained without increasing the water content of the webs. Cardboard so manufactured, containing only a small quantity of water, the drying is easily effected at small cost, while the cardboard itself is dense and possesses high resistance. Webs containing about 40 or 50 per cent. of water may be easily rolled and kept in rolls, and one can produce these in a single machine to employ them later in the manufacture of cardboard by the present process. Their cohesion is sufficient to enable them to be unrolled and superposed automatically by simple drawing action. It is also rendered possible to make cardboard of considerable thickness, for they quite well sustain the action of the press whatever be the number of webs superposed. The nature of the cardboard may be varied at will by changing the nature of the principal material of all or part of the webs. It is thus easy to armour or strengthen the cardboard by the intercalation of webs of any suitable nature, such as tissues formed of vegetable, animal or mineral fibres, or such webs may equally constitute one or both of the external faces of the cardboard. Cardboard makers, when they place a loading of inert matter in their products, realize this incorporation in the sheets themselves composing the cardboard. This is evidently detrimental to the power of resistance, for the fibres are embedded and submerged in non-fibrous materials. The new process, while not excluding the above operation, permits the interposition of loading material between the webs by mixing the same, for instance, with the cementing agent."

Fig.1

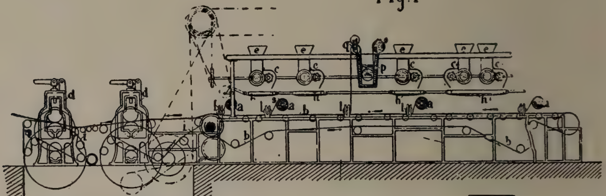

Fig.3.

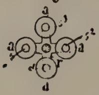

Fig.4.

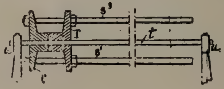

Fig.2.

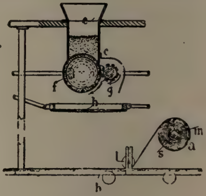

Fig. 1 is a side elevation, more or less diagrammatic, showing the improved machine, and Figs. 2, 3 and 4 are details.

In Fig. 1 *a* represents rolls of pulp: these rolls are formed on metallic tubes *m* (Fig. 2) threaded on rods *s* mounted transversely of the machines so as to be able to turn on their axes. The rolls *a* are then free to turn to permit the webs to unroll under the action of a slight drawing effort exerted thereon; they may be subjected to breaking action so as to produce the desired tension of the webs in the course of operation. The sheets unrolled from the rolls *a* are superposed as shown and are carried along by the endless moving belt *b*; the heavy cylinders *l* press with all their weight on the webs, thus ensuring the unrolling of the latter and ensuring their being carried along by the belt *b*. Between each two roll-supporting rods *s s* is a distributor *c* of collodial material; in the following description it may be presumed to be ordinary flour. These distributors serve to powder with flour the successive webs before they are covered by the following webs. The sheet so formed by the superposition of the webs, the number of which will correspond with the thickness of cardboard to be

btained, is finally passed between the
ylinders of one or several presses along
ide each other, as shown at *d*, and then
rrives at the drying chamber. If the
umber of webs to be superposed is con-
iderable it may be desirable to arrange
uch presses at intervals throughout the
ngth of the machine so as to secure
e cementing together of a certain
umber of webs already superposed
efore adding new webs.

The distributors *c* may be constructed
any suitable manner. In the examples
own (Fig. 2) they comprise a hopper
containing flour, the bottom of which
opper is closed by a cylinder *f* provided
ith circular or helicoidal grooves.
hen turned in the direction indicated
the arrow this cylinder caries some
our in the grooves, and the flour is
tached and sub-divided by the brush
which rotates at a high speed. The
our falls on a reciprocating screen *h*,
d the latter delivers it in a state of
e division in a uniform layer on the
eb moving beneath.

As stated above, loading material may
mixed with the cementing agent.
his may readily be done by arranging
ongside each other two distributors
c^2 (Fig. 1) one for the cementing
ent and the other for the loading
aterial. The pulverulent products sup-
ied by these two distributors fall
gether on the mixing and dividing
reens h^1 which effects the mixing there-
and also distributes them uniformly
the web passing beneath.

The cylinders of the presses *d* may,
desired, be coated with felt, or if pre-
rred, an endless felt such as *i* may pass
tween one of the cylinders and the
eet being pressed.

To permit continuous operation of the
achine the supports of the rolls *a* may
arranged to receive several rolls
hich are supplied in succession. The
id supports may be recharged during
eration: Figs. 3 and 4 show an
rangement for this purpose. In this
stance each of the rods *s* of Fig. 1
replaced by a transverse shaft *t*
ounted on side brackets *u*. On this
shaft are keyed alongside each other at one side of the machine two cheeks *r* to which are fixed at one end rods s^1, s^2, s^3, s^4 receiving the rolls *a*. While the roll *a* carried by the lower rod s^1 is unrolling a new roll may be threaded on the adjacent rod s^4. When the roll on s^1 is finished the member *r*, *t* is turned through 90 degs. and the roll on s^2 is now unrolled; during this time a new roll may be threaded on s^1 which has taken the place of s^4. Instead of being fixed on the rotating cheeks *r* the roll supporting rods *s* may be mounted so as to turn on their own axes.

It is stated above that the process permits of the intercalation of one or several layers of tissue or other materials in the thickness of the cardboard or of covering the cardboard with layers of this kind during manufacture. In Fig. 1 is shown an arrangement permitting the intercalation as above indicated of material in sheets, or even in the state of ribbons or parallel threads. This material, which unrolls from the bobbin *o* passes into the sizing trough *p*, then between the washing rollers *q* and is superposed on the webs already carried by the belt *b* at the time of its passage beneath this arrangement. The trough *p* may contain liquid paste or glue in hot or cold condition; it would suffice to have the tank filled with water only if there be a distributor *c* of collodial material provided immediately in front of and immediately beyond this arrangement.

The World's Paper Trade Review says some enquiries have been made in England for this machine, and adds:

"The machine is in operation at the works of the Société Française of Orchamps (Jura), France. The process allows the production of an endless variety of boards, and it is claimed highly satisfactory results are achieved with almost any class of pulp, whether rich or poor in fibre. Any degree of hardness may be given to the boards by the introduction of suitable material for the different webs and the nature of the adhesive material employed. White or colored boards, on one or both sides, are obtained by intercalation between two white or colored webs. Samples submitted to our notice show one colored side obtained by means of a roll of dry colored paper (weighing 240 grains per square yard), automatically superposed by the action of the machine.

In adopting the new process at Orchamps, we are informed that great economy has been effected. The webs are obtained by means of a machine that at one time was used to roll ordinary moist mechanical pulp. The adoption of the new machine, however, has made it possible for the mill, whose output was formerly all mechanical, to make a specialty of boards. It is reported that the mill's product is in good demand in France for stamping purposes, the material not being injured, as is frequently the case with other boards, by the action of the stamping machine. Samples of the machine's make may be obtained upon application to the Société Française, of Orchamps (Jura), France.

"In the matter of cost it is estimated that for the erection of new premises and the installation of machines necessary for a production of 1,500 tons of cardboard per annum, the sum of £3,000 would suffice. The improved machine, which it is stated is simple in construction, does not involve an expenditure of £1,000.

"The inventor, Mr. Loria, engineer, Orchamps, Jura, France, wants to sell the English and American patents, or grant licenses for working the machines."

* * *

Esparto or Wood Pulp

Some Reasons Why Paper Manufacturers in France Use Product of Forest Instead of That of Field.

Under the heading of "Why don't they make Esparto paper in France?" M. Jules Domergue has written a series of four interesting articles, which have been appearing in the last few numbers of the Revue de la Papeterie. He began by dwelling upon the possibility that a shortage in the supply of wood for pulp making purposes may occur sooner or later, in view of which it is desirable to find some efficient substitute, as it takes longer for a tree to grow to pulp-wood dimensions than it does to raise a crop of esparto grass, a commodity which—notwithstanding that it is so largely grown on French territory—is mostly allowed to pass into the hands of foreigners, who produce by its means papers that are actually exported back to Algeria.

As M. Domergue points out, the exploitation of esparto as a papermaking material is largely due to the fact that the late Mr. Edward Lloyd, of Sittingbourne, obtained some concessions for collecting it in the neighborhood of Arzew in 1869, when 6,500 tons were exported, a total which grew to 42,000 tons the year following. Although considerable quantities of esparto are exported to other countries than England, most of it is used for other purposes than papermaking, in rope manufacture for instance. The same is the case with a good deal of the esparto shipped to France. Last year, for example, out of a total shipment of 84,019 tons of Algerian esparto (90 per cent. of it from Oran) only 4,489 tons, the largest annual shipment ever made, and double that of 1903, went to France, and not more than 2,500 tons, it was estimated, was used in paper mills. On the other hand, 71,900 tons (85.57 per cent. of the entire quantity) was sent to English mills.

Questioned on this subject, French manufacturers say (a) that the demand for esparto paper is limited, and (b) that the current enquiry for low priced makes compels recourse to mechanical pulps. But, says M. Domergue, the former argument presupposes that the numerous high-class books and other publications got out in France are printed on cheap shoddy makes, which is not the case, whilst as regards the latter, if the French mills turned out good esparto papers, and properly introduced them to the trade, there is little doubt but that a market would be created. When he goes on to say that in Scotland—which he evidently regards as the seat of the British esparto paper-making industry—"chutes" of water are numerous, and coals and chemicals much cheaper than in France, it is probable that he is venturing too far into the region of fancy. Perhaps some of our Scots friends would like to offer an opinion on this point.

M. Domergue, however, follows up the remark by saying that it costs much less to send esparto from Algeria to Scotland than to France, nearer though the latter country is. Taking the minimum price of esparto in France at 14 francs (about 11s.) per quintal of about 2 cwt., and assuming the average yield to be 45 per cent., then 2 cwt. (100 kilos.) of esparto pulp would cost 55 francs (44s.) to produce, reckoning the value of the chemicals at 8s., and that of the labor, coals and general charges at 12s. But in England a quintal of alfa would only cost, it is said, 11 francs (i.e., 8s. 10d.), and the English paper-maker would get 50 per cent. of pulp out of it. Thus 2 cwt. of pulp would cost only 35s. 3d. to produce in England, the value of the chemicals being taken as 6s. 4d., and that of labor, coals, etc., at 11s. 3d. On this basis, the French product would cost 25 per cent. more to prepare. But these calculations date from 1889, when they were got out by Dr. Trabat, Professor at the School of Medicine at Algiers, and in the succeeding fifteen years, of course, many changes have taken place.

For instance, the Algerian Customs valuation officers reckoned that the average value of a quintal of esparto, delivered on the quay of an Algerian port, was only 6s. 2d. last year. Adding to this the freight to a French or English port, brings up the cost to about 7s. 3d. It is estimated, however, that the ultimate cost of transport to the mills differs so largely as to leave a balance of nearly half-a-crown per quintal in favor of the English mill owner. One other reason why the latter has an advantage is to be found in the fact that chemicals are admitted duty free into the United Kingdom, whereas the French have to pay an import duty on them. If this dificulty were removed, an increased import duty levied in France on esparto paper, and a lower quotation for carriage of the raw material made by the French railway and transport companies, there might be some chance for the establishment of a French esparto paper manufacturing industry. For the difficulties in the way of establishing it in Algeria itself are great, chiefly due to the lack of fuel and water.—Paper Trade Review.

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[For the Pulp and Paper Magazine.]

PAPER MACHINE.

The Calculation of Output.

By R. W. Sindall, F.C.S.

The study of output, or the yield of paper from the paper-making machine, is one which will naturally interest owners, manufacturers, and workmen alike. Some detailed account, therefore, of the principles underlying the various methods of calculating the possible turn-out on a machine, and of the several factors which require to be considered, cannot fail to attract the attention of those whose daily occupation and business it is to work a paper machine under any given set of circumstances. Most machine tenders and superintendents have some plan of determining the probable output, when the various conditions necessary for so doing have been stated, and their results, based, as they are, upon the experience of past years, are usually correct. It will be satisfactory, however, to study this question in a more scientific manner, in order to show without doubt or suspicion how output can be accurately and readily calculated.

We may first point out that calculation of output is quite distinct from mere measurement. The latter is an easy operation, which may be accomplished by the simple process of weighing, while the former, under conditions—to which reference will be made in due course—may be made before the machine is even started. Measurement should agree with calculation, within certain limits, which calculation, of course, cannot absolutely regulate, such as errors arising from breaks, allowance for trimming edges, moisture in the finished paper, and so on.

The actual output of paper on the machine is always easily measured if the paper produced in a given period of time is carefully weighed. It is only necessary to decide on the length of the period, say one, two, or three hours, and then weigh the reel or reels produced during the time, together with any dry broken paper which may have been made. In cases of this kind it is advisable to run the paper for an even number of hours, or minutes, as the circumstances of the test will allow, in order to avoid any complications arising out of frictional parts of the hour.

Example 1.—Period of observation, 4 hours; weight of finished reel nett, 1,063 lbs.; dry broken, 61 lbs.; output of paper in lb. per hours = 1,124 ÷ 4 = 281 lbs.

Example 2.—Period of run, 2 hours 18 minutes; nett weight of reeled paper, 392 lbs.; output $= 392 \div 2\frac{18}{60} = 392 \times \frac{60}{138}$ $= 170\frac{1}{2}$ lb. per hour.

It is clearly evident from these examples that there is no difficulty in calculating output by measuring the weight of paper produced in a given time, if that simple operation is allowable. In the majority of cases which occur in actual practice, the determination of output after the machine has started up, is of very little moment or importance compared to the calculation of the possible yield before the machine commences running. It is not necessary to emphasize this point, since it is obvious that any easy method of finding the theoretical turn-out has a peculiar value of its own. Hence we may give our attention to this more important part of our subject, the scope of which may be gathered from the following questions: (1) If the necessary qualifications of the sheet be made, both as to size and weight are known, and the running conditions of the machine, namely, speed and width of web, are also known, what calculations are required to determine the output in lb. or cwts. per hour before starting the machine? (2) Given the make of paper, its size and weight, and also the maximum width of web on the machine, what speed must the machine be run at to give a certain stated output?

Now, in these two instances, the second is in reality the converse of the first. In one question the speed is fixed while the output is to be calculated; in the other the output is to be decided on, so that the speed necessary to produce it must be determined. Thus both speed and output become matters of arithmetical calculation as distinct from actual measurements of paper produced.

It would be quite easy for us to write down here a general formula applicable to nearly every case likely to arise, but the importance of the subject amply justifies us in devoting some space to reasoning out the whole question by considering an actual example somewhat in full, and ultimately arriving at the universal law or formula. In this way we shall eventually frame a more or less simple rule, by means of which any problem of the nature hinted at in the above question may be solved, the rationale of the rule being sufficiently explained in order that none need hesitate to apply it.

Example 3.—What is the maximum output possible on a machine running 100 ft. per minute with an 80" deckle, producing a sheet of paper 20" x 30", weighing 30 lb. per ream of 480 sheets?

Reducing these dimensions to inches in each case, we see that every minute the length of paper passing any particular point on the wire or on the calenders is 1,200 in., while its area is readily determined by a simple multiplication, thus:

Area of paper produced per minute = 1,200 x 80 square inches. Now the area of one sheet is 20 x 30 square inches. Hence, dividing the area of paper by the area of one sheet, we at once arrive at the number of sheets produced per minute. Thus (1,200 x 80) ÷ (20 x 30) is 96,000 ÷ 600, which is 160 sheets made in one minute, or 160 x 60 sheets per hour = 9,600.

Since 480 sheets go to make one ream weighing 30 lb., it is clear that 9,600 ÷ 480 is the number of reams per hour, namely, 20. Hence, the output in lbs. per hour is 30 x 20 reams = 600.

Note.—We have purposely selected an easy example in order to avoid complicated fractions, which, although dealt with in precisely the same way, are apt to confuse and hide the reasoning, when an example is being dealt with.

Example 4.—A machine having a 75" deckle is required to give an output of 3 cwts. per hour of paper, the sheet being the following dimensions and weight, 25" x 18" (500 sheets to the ream- = 19 lb. What is the machine speed necessary to produce this quantity?

In this case the arguments for solving the problem are exactly the same as the above, except that the various steps are reversed. We may arrange these in a tabular form: Output in lb. per hour = 3 × 112 = 336 lbs.; number of lb. to the ream = 19 lbs.; hence output in reams = 336 ÷ 19 = 17¾ nearly; one ream contains 500 sheets; hence number of sheets per hour = 17¾ × 500 = 8,875; or sheets per minute = 148 nearly.

Number of sheets per minute × area of one sheet = area of paper per minute.

Hence, 148 × (25 × 18) = area of paper made per minute, and since area of paper = 75 × speed per minute, 148 × 25 × 18 = 75 × speed, 888 = speed in inches, or 74 feet per minute. Thus allowing no margin for broken, stoppages, and other hindrances, the machine must run at 74 ft. per minute to give the output required.

It should be understood that our purpose for thus explaining in detail the several steps by which output or speed may be determined is only to give our readers an opportunity for seeing how the universal formula, which is to follow, has been arrived at. To reason out every actual case in the manner above described, would be a very long and clumsy process, entailing a great deal of unnecessary thought and calculation, which it would certainly be desirable to avoid.

Now, to arrive at the formula, we must refer back to Example 3. If we perform the several multiplications and divisions therein specified at one operation, instead of working them out separately, we get the following somewhat formidable array of figures in the shape of a fraction, the nature of which is simple enough for those accustomed to fractions.

Output in lbs. per hour:

$$\frac{60 \times 12 \times 100 \times 30 \times 80}{480 \times 30 \times 20} = 600$$

Now let us examine this form. Sixty is the number of minutes per hour, and 12 the figure necessary to reduce the speed to inches. It is clearly to be seen then that these two numbers must appear in every calculation of this kind. Hence we may write them as one, namely, 720. Now 100 is the speed in feet per minute. Let us denote the speed in feet by the letter F. Then the figure 30 next to it is the weight of the ream in pounds. Let us call this weight R. The top line of the fraction may now be written 720 x F x R x 80.

In the bottom line 480 is the number of sheets per ream, and we know that this number is always 480, 500 and 516. Let us denote this by S. The other figures 30 x 20 are the dimensions of the sheet.

When the size of the sheet is fixed, the deckle width of the machine is usually altered so that one, two or three sheets may be simultaneously cut from the complete web. In this case it is obvious that with a deckle width of 80″ the paper would be cut into four sheets—80 ÷ 20 being 4—a certain allowance, of course, being made for edges. So that, instead of allowing the deckle width to appear in the above fraction, or one of the sheet dimensions, we can simplify matters by substituting the number of sheets being made across the web for the figure representing the deckle width, and omitting one of the dimensions of the sheet. Now 80 ÷ 20 = 4, which is the number of sheets across the width of the machine.

The above fraction can now be written:

$$\text{Output in lb. per hour} = \frac{720 \times F \times R \times 4}{S \times 30}$$

If we denote the number of sheets across the web by N and the remaining dimension of the sheet by L, we get the general formula, which may be applied to any case:

$$\text{Output in lb. per hour} = \frac{720\ F\ R\ N}{L\ S}$$

The same formula is required for cases exemplified by the second problem worked in Example 4. It is simply necessary to substitute figures for the letters, where these are known, and then to calculate the quantity required.

We may show the simplicity and usefulness of the formula by using it here to check the results arrived at by mere reasoning in that example:

$$\text{Output} = \frac{720 \times F\ R\ N}{L\ S}$$

In the example quoted we have given: Output, 336 lbs; weight of ream R 19 lbs.; number of sheets N, 75 ÷ 25 = 3, length of sheet L, 18″; number of sheets per ream S, 500. We require to calculate speed F. Substituting figures in the formula we get:

$$336 = \frac{720 \times F \times 19 \times 3}{18 \times 500}$$

This fraction can easily be simplified, or it can be worked out in full, thus:

$$41040\ F = 3024000$$

Hence the speed in feet per minute $F = 74$.

With this formula the maximum theoretical output is readily calculated, but the actual output obtained depends on several conditions, to which some attention must be paid. In the first place it is assumed that no break will occur, either at the wet end of the machine or at the calender rolls. It is also taken for granted that the paper is reeled in a normal air-dry condition. The approximate relation between theoretical and actual output may be determined by close observation under varying conditions, and a fair average ratio ascertained. If the observations are made over a sufficiently long period any errors, due to breaks or delays, can be represented by average allowances without any differences occurring. In the same way any constant differences are readily allowed for after some experience and trial.

The weight of paper produced on the reeling end of the machine does not represent the quantity which is eventually packed ready for delivery. Losses of various kinds ensue, in a greater or lesser degree, according to the nature of the paper and the order. Re-reeling, making joints, cutting out defective places in the reels, sorting off the cut sheets in cases where the reamed-paper is wanted; these are all operations which tend to lessen the output actually obtained, the influence of which is beyond mere calculation, although within the range of observation and experience.

We need hardly stay to dwell upon these points since they do not come within the scope of this article. It is necessary, however, to make some allusion to them as factors to be considered in the practical application of a theoretical calculation in order to show in what direction a paper-maker may look to explain any differences between real and theoretical output.

For these reasons considerable care is necessary in applying the results of calculated output per hour to the practical work of any machine. It is an evidence of want of thought and experience when the yield of paper, as determined by means of the above formula, showing the output per hour is made the basis of calculation for long periods of ten to twenty hours, or for a stretch of several days, without making such allowances as those hinted at. This fact, however, is so obvious that we need scarcely do more than briefly mention it, since the formula is only intended to give the method for finding the maximum possible output under the most favorable conditions, as a means of gauging the amount of paper likely to be made under ordinary circumstances.

In some cases it may be more convenient to calculate the output in reams per hour instead of by weight in lb., or the application of the formula may be required to find the speed necessary to produce a specified number of reams. This is easily effected by omitting the weight of the ream in lb. from the formula, namely, W. In this event we get:

$$\text{Output in reams per hour} = \frac{720 \times F\ R}{L\ S}$$

Example 5.—How long will it take to produce 1,000 reams of paper with sheet 17½" x 22½" (500 sheets to the ream), weighing 20 lbs., on a machine running 110 ft. a minute with a 70" deckle?

$$\text{Output in reams per hour} = \frac{720 \times 110 \times 4}{500 \times 22\frac{1}{2}}$$

The deckle 70" divided by 17½" gives the figure 4.

$$\text{The output per hour is, therefore} = \frac{31{,}680}{112\frac{1}{2}} \text{ or 28 reams.}$$

$$\text{Number of hours to make 1,000 reams} = \frac{1000}{28} = 36.$$

This on a supposition that no stoppage or break occurs.

DRYING PAPER BOARD.

One of the most important questions which arise in a board mill is: "How can the drying of paper board be cheapened, simplified, and expedited?" In all existing systems, be the drying effected by means of air, heat, or steam, the machine is very costly, the operation of drying takes too long, and the hanging up of the separate sheets costs an enormous amount for wages. There is also a large amount of waste, and the prices paid for the boards are by no means proportionate. Moreover, although changes and improvements in all other branches have been made in all directions, in this particular branch there has been a complete standstill, and the drying of pasteboard is yet far behind in every respect.

A radical change in the state of affairs is much to be desired, and any assistance of real practical value would be heartily welcomed. The most widely used reliable, and, last but not least, cheapest method of drying paste boards is drying by means of air, which, however, is unfortunately impossible in winter. How many mills suffer from this great evil in spite of commodious drying rooms, and are compelled to either lay by such a stock in the summer as will carry them over the autumn and some of the winter months, or else lie idle the whole winter, I need scarcely mention here. A noteworthy advance in the manufacture of board is its manufacture on long wire machines provided with a large number of cylinders, the paste board being made in roll form; but in this method the strength is limited and the necessary drying apparatus very expensive.

Generally speaking paper drying plants are constructed in most cases without any prior investigation into the theoretical consideration of the process of drying. The result of this is that most of the drying plants in existence at the present day only rarely satisfy the demands made upon them, and scarcely any of them can be relied on in unfavorable weather, and are in many cases complete failures. The action also of the particular circumstances which affect the efficiency of the plant cannot be accurately estimated without careful observation. The best conditions can only be chosen when a comprehensive survey can be obtained of the influences and action of the variations of air pressure, temperature, and saturation on the efficiency and consumption of air and heat by the plant.

In every case, therefore, the following points should be determined: 1. The amount of heat which is to be employed. 2. The heating surface required. 3. The volume of air to be kept in motion, both before being heated, after being heated, and as it issues from the drying-room. In determining the amount of heat required, all that is necessary is to remember that the air which is to do the drying has first to heat the stuff to be dried; secondly, to supply the water to be evaporated with the necessary heat of vaporization, and lastly, convey the vaporized water away with it. The so-called "summer drying" is practically worthless, for if the weather is at all bad immediately breaks down, and if another drying plant which can be heated is not available, drying becomes an obvious impossibility.

On the other hand, flue drying is not satisfactory on account of the complicated manipulation and costly up-keep; and, moreover, the yield is poor and the product considerably inferior in strength and toughness to the air-dried article. The efficiency of a drying plant depends chiefly on the fact that the passage of the air through the drying chambers must be uniform at all points and must not be "gagged." The speed of the air in the drying chambers must also be readily controllable, and the control must be such that the heated air has time to take up sufficient moisture, but yet does not pass too slowly through the drying chambers, as this would uselessly prolong the duration of the drying. A drying plant carefully thought out on the above lines will be the best of all the forms at present employed, but it is highly desirable that some improvements should be speedily made in this direction.—"Der Papierfabrikant."

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WATER ANALYSIS IN PAPERMAKING.

It is well known that the water utilized for papermaking has a great influence on the quality of the manufacture. Though much has been written on this subject, it may be of interest to give a simple method by aid of which the manufacturer can immediately ascertain the kind of water with which he has to deal.

As it is not always possible to make a chemical analysis, Messrs. Boudet and Boutron have proposed a rapid method of analysis which may be of great service to papermakers. It is based upon the employment of a tincture of alcohol and soap, which makes pure water foam, and merely causes lumps in that which contains lime and magnesia. When a few drops of this tincture are poured into a flask of distilled water and shaken, a light, permanent foam is formed on the surface. If, instead of distilled water, a more or less calcareous one is selected and a proper amount of tincture added, so as to avoid neutralizing the lime or magnesia salts, no foam appears, but merely insoluble lumps.

The tincture is prepared by dissolving ten parts of Castile soap in 160 of a 90 degs. solution of alcohol, and heating to boiling point. After filtration 100 parts of distilled water are added. This tincture is titrated as follows: 0.25 centigrammes of dry chloride of lime are dissolved in a litre of chemically pure distilled water. Then, with a burette of about seven cubic centimetres capacity, six cubic centimetres are measured off and divided into fifty-eight equal parts. In the next place four divisions, each ten cubic centimetres, are made on an eprouvette of sixty cubic centimetres capacity and forty of the chloride of lime solution added and twenty-three of soap and alcohol tincture, counted with the burette; the mixture is then shaken. When a light, permanent foam forms on the surface the soap and alcohol tincture is normal. In the opposite case a certain amount more of tincture is gradually poured into the éprouvette until formation of foam. Supposing that three parts more are needed to produce foam—in this case we add to the tincture of alcohol and soap as many times 1-23 by weight of distilled water as necessary; i.e., in this particular case, 3-23. Once titrated, the tincture is kept in well-corked bottles.

To analyze a sample of water forty cubic centimetres are poured into an eprouvette, and a certain amount of titrated solution is gradually added, while stirring, from a graduated burette. When a foam, about five millimetres thick, forms and persists at least ten minutes, no more need be added. Then the degree corresponding with the level of the remaining solution is read on the burette, which indicates the hardness of the water tested.

When it contains too much lime it must be mixed with distilled water in the proportion of 1, 2 or 3; the hydrotimetric degrees thus formed will represent double, triple or quadruple those really indicated.

Hardness of water may vary at any moment owing to storms, prolonged rain and variations in temperature. Consequently the papermaker should always have a reliable test method at hand. Other methods have been recently proposed utilizing alizarine methyl orange and acids, but according to Messrs. Boudet and Boutron, the hydrotimetric method described meets the needs of makers better than any.—World's Paper Trade Review.

BEST METAL FOR DIGESTERS.

K. Rubricius, in "Der Papierfabrikant," discusses the best material to employ in the construction of a digester for wood fibres. Of wrought iron, soft steel or copper, he thinks soft steel is the best. His conclusions are as follows:

"Although these kinds of steel plates may be superior to our old trustworthy soft steel plates as regards strength, it is by no means certain that this superiority extends to all their other qualities, such as toughness, ability to resist low temperatures, trying differences of temperature, acids, boiling liquors, etc. Only when the results of actual experience have shown that all the special properties claimed for this material are really possessed by it can it be safely and confidently urged for the construction of digesters. With regard to the last-named material, i.e., copper, it can only be used for building comparatively small digesters on account of its exceedingly high price. Copper has a strength of 25 kilogrammes per square millimetre, is very homogeneous and tough, and is scarcely affected by the boiling liquors at all. If it were only somewhat stronger and cheaper it would be an ideal material for digesters.

"Summing up all the facts above enumerated, it would appear that the best and most trustworthy raw material for digester construction which we possess at the present day is soft Martin steel or ingot iron, and it may confidently be said will remain so until all the other special kinds of steel which have appeared on the market have proved by actual results that they are all that is claimed for them—a matter which the future only can decide.

"The dislike which seems to have latterly gained ground among professionals to Martin steel plates for digesters is, I think, rather unjustifiable. To show how long-lived soft steel plates are, and how well they resist all destructive influences, I will just cite one example of four cellulose digesters occurring in my own experience. These digesters are four metres in diameter and twelve metres in height, are built of the best Siemens Martin steel, and, although they have been in use for eighteen years, they have not, with the exception of internal corrosion and some trifling injuries, suffered any serious breakdowns, a success which must be ascribed solely to the material employed. I may also mention that these digesters are situated in a mountainous district of Austria where low temperatures in winter of 15 to 20 deg. C. are not at all uncommon."

RESIN IN WOOD PULP.

Prof. W. Herzberg, of the Royal Testing Institution near Berlin, recently made some tests to determine the quantity of resinous matter in wood pulp. The work arose through a dispute between a paper mill and pulp merchants with regard to the percentage of resinous matter. The pulp was sulphite cellulose prepared by the Ritter Kellner process, and the paper mill complained of the large percentage of resinous matter in the more recent consignments. On testing five samples of these, and comparing the results of a similar number from older consignments, it was found that in the former case the mean percentage was .6 per cent., and in the latter .65 per cent., from which it was concluded that there was no real difference between the older and the newer consignments.

These tests, however, led Professor Herzberg to make further experiments with regard to the percentage of resinous matter in chemical wood pulps. Some ten paper mills in various parts of Germany submitted material for the experiment.

The results show that, as might be expected, the percentage of resin in the bleached material is lower than in the unbleached. The various methods of production of sulphite pulp judged from the mean values obtained do not exert much influence on the percentage of resin. The mean of the whole of some 69 tests gives a value of just under ½ per cent. of resin, so that for rough purposes we may reckon that sulphite pulp contains ½ per cent. resin.

The percentage of resin in soda pulp is very considerably less than in sulphite pulp. Out of twelve tests results are obtained less than .1 per cent., with one exception the mean value being about .04 per cent. The difference, then, between the percentage of resin in the sulphite and soda pulp is so large that in cases of doubt important conclusions can be drawn from the results of the determination.—Paper and Pulp.

KOOS FOR PAPERMAKING.

Experiments made some time ago with Koos, one of the grasses of India, showed that it had a clean fibre and a strong one, and as the result thereof shipments of the grass were made down the Ganges, on the upper reaches of which it appears to abound, to the paper mills at Titaghur. There its good handling qualities secured for it prompt attention from papermakers, but after a good deal of attention had been given to it, it had to be abandoned because it did not readily render itself amenable to bleaching by means of the ordinary processes. The paper made from it is stated to have possessed the tenacity of bank notes, and one writer says that, but for its obduracy in the matter of bleaching, Koos would have formed the ideal material for papermaking.

THE QUESTION OF MOISTURE.

A Decision by the United States Board of General Appraisers.

In a decision of the Board of General Appraisers, handed down by General Appraiser Henderson M. Somerville, the board has sustained the protest of the Pulp and Paper Trading Company, of New York, in regard to the weight of an importation of ground wood. The Government chemist reported the air dry weight of the importation to be 60.654 per cent. Against this percentage the importing company filed a protest, claiming that the air dry weight of the pulp was 54.89 per cent. After a hearing the board decided in favor of the importer.

The opinion is as follows:

Paragraph 393 of the Tariff Act of July 24, 1897, provides for "mechanically ground wood pulp, one-twelfth of 1 cent per pound dry weight," and the analogous provision in the Tariff Act of October 1, 1890, so far as pertinent, reads:

415. Mechanically ground wood pulp, $2.50 per ton, dry weight. * *

The latter paragraph was construed by the Circuit Court of Appeals in United States vs. Perkins, 66 Rep., 50, 13 C. C. A. 324, where it was held that the term "dry weight" did not refer to the absolute dry weight of the material immediately after desiccation in a kiln, but to the air dry weight as understood in commerce, and it was further observed that it is not customary to make an allowance for moisture in wood pulp where the moisture does not exceed 10 per cent. of the total weight. This decision reversed the decision of the Circuit Court and affirmed the decision of the board in In re Perkins, C. A. 632 (T. D. 11,349).

The present importation consists of mechanically ground wood pulp, the air dry weight of which was reported by the local appraiser, upon the basis of the analysis made by the Government chemist, to be 60.654 per cent. The report of the appraiser appears from the record to have been based on the analysis of two different samples. How many bales are represented by these samples does not appear.

The testimony taken at the hearing on the part of the importer shows a chemical analysis by a competent chemist, which was arrived at by drying the total sample taken from 185 bales. The method pursued was the usual one known in England as the Sindall No. 6, which is stated to be as follows:

The sheet to be sampled is divided into four rectangular figures of equal area, the centres of these rectangulars indicate the positions of the pieces to be cut.

This test showed:

Moisture	50.60 per cent.
Absolutely dry pulp	49.40 per cent.
Air dry pulp	54.89 per cent.

The secretary of the importing company, who seems to be familiar with importations of this kind and has been connected with the firm for over ten years, dealing in pulp of this character, expresses the opinion that the general average of moisture contained in this pulp and shown by the analysis presented by the company is within 1 or 2 percentum of what it usually is, as shown by similar analysis of like importations, and that there could not be a variation of 9 per cent. in the moisture in pulp manufactured in the same way, as appears from the analysis of two samples by the Government chemist.

We are of opinion that the preponderance of testimony favors the conclusion that the air dry weight of the wood pulp under consideration is 54.89 per cent., as contended for by the importer at the hearing and in the protest. The decision of the collector is reversed and the protest sustained, with instruction to reliquidate the entry on the basis of the dry air weight shown by the test made for the importer, i.e., 54.89 per cent.—Paper Trade Journal.

Mill Matters

A European house of high standing desires an agent in Canada for the purchase of Canadian pulp for export. Applications can be made through this magazine as announced elsewhere.

The United States manufacturers of wall paper held an exhibition at New York last month, the purpose being to show the new designs to the trade. Fifty-two factories were represented and the show was attended by jobbers from all parts of the country.

The Canada Paper Box Co., Montreal, capital $20,000; G. A. Forbes, G. H. Bisset, W. E. Cook, P. F. Richardson, J. F. Scriver, Montreal, directors, has been incorporated to manufacture paper, cardboard, etc., from wood pulp and manufacture same into boxes, bags, etc.

The Ware Co., of Canada, has been incorporated in Montreal with a capital of $40,000. A. B. Ware, W. L. Bond, J. W. Thomas, Montreal; J. L. Williams, Three Rivers; F. Trelford, Niagara Falls, Ont., are the incorporators, and the company will carry on business as printers, manufacturers of papier maché, etc.

A member of the Executive Committee of the Lake Superior Corporation, Sault Ste. Marie, says that besides the erection of coke ovens the Executive Committee is now considering the re-opening of the sulphite mill, and this will be carried out just as soon as arrangements can be made with the contractors to get a sufficient amount of raw material for the mill. So much lumber of various kinds is needed to keep all the plants in full operation that it makes it difficult to get all that is required. A report from Superintendent Hodgson, who has charge of this department, shows the amount of wood cut for the various works this year as follows: 120,000 cords of wood for the charcoal plant, 130,000 cords of wood for the pulp mill, 10,000,000 feet of pine for the sawmills, and 200,000 feet of birch for the veneer mills.

In the course of an interview with the Montreal Star, W. D. Reid, of the Reid interests in Newfoundland, reported on the progress of the island, and said that all the various enterprises of the Reid Company had proved successful, and would prove more so in the future, since the Harmsworths had taken a hand in the commercial affairs of Newfoundland. He considered the Colonial Government had made a good bargain, and added:—The Harmsworths have also purchased from private parties, under very favorable terms and conditions, 2,000 square miles of rights and territories. They have acquired one water-power alone giving over 40,000 horse-power, and plans were under way for the manufacture of paper in the island. Their present consumption of this article amounts to 1,000 tons per week, all of which may be expected to be obtained in Newfoundland. Surveys have been started and are well under way in order to determine the best location for the mills to be erected for this purpose. This manufacture alone would add $2,500,000 (or 25 per cent.) to the total exports of the country. Moreover, the attention of other powerful interests has been drawn thereby to the country and already another large syndicate is treating for the acquisition of as large a territory as that acquired by the Harmsworths. The islanders are now in much better circumstances than formerly, the fruit of a long succession of good years of plenty. The price of fish, the staple product of the island, is very high; in fact, the highest ever known. So far as the catch is concerned, it varies very little from year to year; so the fisheries, which at present form the main industry of the island, affecting the whole island's welfare, cannot but leave the general population in a very prosperous shape. The whaling industry has only lately been started, and has proved most lucrative. Seventeen factories are now in operation, each limited by Government regulations to operate only within certain distances of each other, for the preservation of the industry. These factories are operted on the latest and most improved scientific methods. The capital so far nvested amounts to $1,500,000. The nining industry, which is probably lestined to be one of the greatest feaures of the Island's wealth has lately ttracted much attention, and considerble American capital has been invested vithin the past two years in new mines, rom which already large quantities of re have been extracted. Up to 1898 vhen the railroad was completed and he Reid Co. took over its operations, he country's annual revenue was $1,500,000. The exports and imports combined amounted to about $10,000,000, with the balance of the trade slightly gainst the colony. And these figures had remained about the same for years. In 1904 the revenue had increased to $2,200,000, with imports and exports ombined to about $20,000,000.

According to United States Consul-General Guenther, at Frankfort, luminum paper is now manufactured in Germany and recommended as a substiute for tinfoil in preserving articles of ood. It is not the so-called leaf luminum, but real paper coated with powdered aluminum. Aluminum paper occasionally contains up to 2 per cent. of iron, but never any arsenic or other poisonous metals. Hence it appears that the powdered aluminum paper is relatively pure. The paper used is a sort of artificial parchment, obtained through the action of sulphuric acid upon ordinary paper. The sheets are spread out and covered upon one side with a thin coating of a solution of resin and alcohol or ether. Evaporation is precipitated through a current of air and the paper is then warmed until the resin has again become soft. Then powdered aluminum is sprinkled upon it and the paper subjected to strong pressure to fasten the powder thereon. The metallic covering so obtained is neither affected by the air nor by fatty substances. Aluminum paper is much cheaper than tinfoil and may become a strong competitor.

The average daily output of the seven paper machines of the E. B. Eddy Co., Hull, making all grades from common bogus butchers' manilla up to the finest note and writing papers, and from the heaviest woodboard to the lightest tissue manilla, is from 85 to 95 tons and the company is now very busy in these lines of manufacture.

The legal battle over water-power rights in which, along with other contestants, the E. B Eddy Co., and the J. R. Booth pulp and paper mill interests, are ranged on opposite sides, is now going on, the Eddy Company appearing to have scored the latest point. This point is a decision that the Booth and other companies, including the Ottawa Electric Co., must not let more water pass through their bulkheads until the main case is decided. The supply for the city waterworks is endangered by the proceedings, and the Dominion Government has been appealed to intervene.

A fatal accident occurred on the 30th ult., at Lake Weyamack, on one of the tributaries of the St. Maurice, by which two men lost their lives. The men, who were working for the Laurentide Paper Company, were mining some rocks in a creek with dynamite. They had set the mine, but it did not at first go off, so, after waiting some time, they returned to the spot and had probably been there only a few seconds when the blast went off. Nearly every bone in their bodies was broken, although their faces were recognizable. The names of the unfortunates are Adrien Houle, of Grand Mere, and Willie Payer, of St. Etienne.

The reorganized St. John Sulphite Mills, at Mispec, N.B., now owned by Stetson, Cutler & Co., of St. John and Boston, are to be ready for operation this month, with nearly double the output of the old mill. The logs are driven down the Musquash River, from Stillwater Lake by a chute direct to the landing, where a new log-cutting mill is being erected. This mill will be fitted with five saws, and the gear is such that after the logs are once poled in the pond, they are not again handled until the operation of sawing is complete. Instead of going endwise up the chain, as in most mills, the logs will be carried up side on, and will run on to the first saw, which will cut them in the middle. In the rear, but to one side of the first saw is another pair of saws. One of the halves of the log is carried back to these saws, and again cut in the middle, while by an arrangement of chains the other half log will be conveyed without handling to another set of saws, and by the time these are passed all the wood will be of proper length. It will then be sent by a chute to the scows alongside.

The Spanish River pulp mills at Espanola will be in operation next month. The company had great difficulties to overcome in building the concrete dam across the Espanola Falls. Several times it was in place but as often the swift current undermined it, and one contractor lost nearly $100,000. The pulp mill has been completed for more than one year, only waiting for the turn of the water-wheels, and a model town of brick cottages is waiting for the pulp workers. The Manitoulin & North Shore Railway has a four mile track connecting the mill with Stanley station on the C.P.R. Soo line, and a steel bridge is spanning the falls. Arthur E. Millington, for the past five years superintendent of the Lake Superior Corporation's pulp mill, at Sault Ste. Marie, has been appointed general manager of the mill, and will take charge next month. Mr. Millington is the inventor of the drying machines in use in the Sault mills, and designed their tarred building paper plant. He will be succeeded at the Sault by his brother, George Millington, who has been assistant superintendent.

Since our report of the Cushing Sulphite Fibre case went to press, we learn that fresh trouble has arisen, the mortgagees refusing to deliver possession to the liquidator, and threatening to use force to prevent him from taking charge. The mill has, therefore, been closed down, and many hands are idle.

This month the transfer of 166,000 acres of lumber land, mills, etc., from William Richards Company to the International Paper Company, of New York, will be made. The St. John Sun learns that the price to be paid will be between $600,000 and $750,000. The property which the Americans are purchasing gives them control of all the Richards Company's business on the Miramichi, and they will, therefore, retain their mill property at Campbellton. The property changing hands includes 166,000 acres of timber land on Taxis River, Richards Company's mills at Boiestown and Chatham, and the rest of the Richards plant. The International Paper Company will soon commence work upon the erection of a modern and large pulp mill at Chatham. The mill will have a large capacity. Already the International Paper Company have started to send men into the woods, and several crews have started work under the superintendence of H. H. Gunter, of the Richards Company. One crew of thirty-five men, in charge of John Robbins, is building a dam on the main Taxis, while Saunders Price, with a crew of thirty men, has commenced logging for the new-comers on the Sisters water.

Two men were killed at Sturgeon Falls, Ont., on the 3rd inst., while working on a high platform at the sulphite pulp mills, now under construction. The men had orders to lower a derrick which was being used on the top story. The weight of the derrick must have been miscalculated, or too much play given to the ropes, for the ponderous timber came down with a rush, sweeping the men from the narrow platform. James Dolan and Joseph Gagnon were dashed to almost immediate death on the rocky ground beneath. Ed. Jarbeau, by falling on the first two, escaped with an arm broken in two places and other injuries which are not expected to prove serious. The fourth man managed to clutch a stone projecting from the wall, and hung on until rescued by the other workmen. James Dolan had only been married since spring, and leaves a young widow. Jos. Gagnon leaves a wife and seven children.

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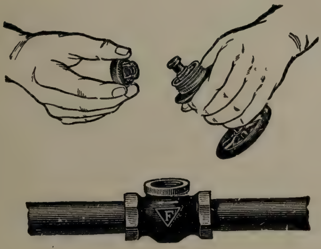

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PULP AND PAPER MARKETS.

Toronto, 19th September.

The Canadian paper mills are generally busy, and, contrary to the reports furnished to one of the United States trade journals, prices are firm, and the demand from the trade good. This is no doubt largely due to the reports of the large grain harvest which has been safely gathered, and is now actually in process of delivery from the Canadian West.

Reports from the United States indicate a steady market with no boom i any line.

The pulp manufacturers and dealer have been concerned by reports o severe drought and forest fires, both i Quebec and New Brunswick, as well a

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ross the border in Maine. The fires ave extended in patches over a wide ea of country, and hundreds of thou-nds of dollars' worth of timber has een destroyed. Providentially heavy ins have at last fallen, and there are ow signs of higher water in the rivers. s an example of the severity of the rought in middle Quebec, the Mont-orency River ceased to flow, and the istoric Montmorency Falls were en-rely dried up for some days. The pulp ills are well employed, and prices eady.

From New York it is reported that hile enquiries are numerous and the aper market is good, sales of ground ulp are light, and stocks large, so that he pulp mills are not able to get any dvances. Ground wood is quoted there t $19 to $22, delivered at the mill.

In chemical wood fibres the demand s reported good in the New York arket, and there is some stiffening in rices. Unbleached is scarce, both omestic and foreign; and domestic oda pulp is firmer. Manufacturers ave sold out for this year, and are uoting for next year and 1907. A meet-ng of manufacturers was to be held this onth in New York, when it is ex-ected that an advance will be made.

The British market is reported firm with prices as follows:—Sulphite, bleach-ed, £10 10s., to £11 10s.; unbleached, £9 5s., to £9 10s.; unbleached, ordinary, £8 10s., to £9; soda, bleached, £9 15s., o £10 10s.; unbleached, £7 15s., to £8 s.; unbleached, ordinary, £7 5s., to £7 5s. Mechanical pine, dry, £4 7s. 6d., o £4 17s. 6d.; 50 per cent. moist, £2 2s. 6d., to £2 17s. 6d.; brown, dry, £4 7s. 6d., to £5; 50 per cent moist, £2 5s., to £2 10s.—C. I. F. London or Manchester.

The Swedish paper, Affarsvarlden, reporting upon the British wood pulp market, says:—"Signs of greater activity are now discernible in the mechanical wood pulp market, several fresh enquiries having come out during the last fourteen days, and some contracts have

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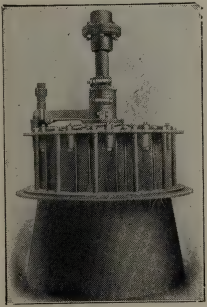

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been closed for 1906, chiefly, it appears, in the better grade mechanicals which are required for superior wood papers, and are usually used by the same papermakers from year to year. The prices paid are said to be satisfactory to the sellers, i.e., on a level with the quotations they have been maintaining now for some weeks past. There are a few enquiries about for prompt delivery, but comparatively small quantities offering, and prices are firm, in the vicinity of 30s. or 40s. f.o.b., for packed pulp, first quality. Some of the more far-seeing paper-makers in this country are undoubtedly in keen, though quiet, negotiation for forward supplies of mechanical pulp, and are trying hard to get on in one quarter or another at a shilling or two lower than the present quotations from Scandinavian pulp makers, but up to the present there is no definite report of any purchase being effected at such lower rates. The strong position of chemical pulps remains unaltered, and to enquiries for 1906 delivery very many mills now have to reply that they are quite sold out. At the moment, rather more pulp seems available for this year's delivery than could be found offering some four to five weeks ago, but good prices are obtainable for such lots, which do not go far round the market before finding buyers. One or two papermakers report slack business in paper, and say they are not using the quantities of pulp expected. Others, quite on the contrary, press eagerly for every ounce due on their contracts, and start making the pulp into paper practically as soon as it is unloaded from the railway wagons. If one could only see all the stocks at present on this side, it would undoubtedly be found that many a paper mill is running with its stocks at a perilously low ebb.

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RAG AND PAPER STOCK MARKET.

September 19th, 1905.

The scare in rags owing to the prevalence of cholera in Germany has had its influence on the market here to a lesser extent than in the United States. Russia and Austria have placed an export duty on rags, and the association of paper manufacturers in France has met in Paris and resolved to petition the

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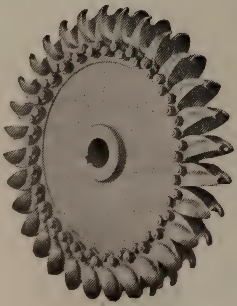

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rench Government to put on a similar
xport duty. As stocks of foreign rags
re not large, and are likely to become
till smaller if the cholera scare con-
inues, domestic stocks are held firm
ending developments. In the following
uotations the higher figures represent
nore nearly the average prices than they
id last month:

Vo. 1 white shirt cuttings	$5.25	to	$5.75
ight print cuttings	4.00	to	4.50
Jnbleached cuttings	4.50	to	5.00
Vhite shoe clips	4.00	to	4.50
Colored shoe clips	2.75	to	3.25
Domestic white cottons..	2.25	to	2.50
Blues and thirds cottons.	1.40	to	1.50
Roofing stock	.60	to	.70
Waste papers	.30	to	.35
Manilla rope	2.12½	to	2.25

CHEMICAL MARKETS.

The British market is reported firm
or most lines of paper and pulp makers'
hemicals.

The New York market is reported by the Paper Mill as follows:—Some interest is being shown in bleaching powder, and orders are booked for August-September delivery at $1.25 and up for foreign or domestic. Prices for brimstone advanced, and demand is fairly good, warranting the belief that additional advance will be made. Prices quoted September 15th are $22 for New York, Boston and Portland, and $22.50 for Baltimore and Philadelphia. Caustic soda is in demand from all sections, and sales are made for 1906 delivery on the basis of $1.75 to $1.80 for high test, and 10c. higher for 60 per cent., f.o.b. works. The imports continue small. Domestic china clay is very quiet at $7.50, and foreign is unchanged at $11, but some strong competition in the foreign clays continues.

* * *

Any rupture between Sweden and Norway would be a serious matter for many paper mills in the United States. A paper mill owner there says the United

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States is absolutely dependent upon the sulphite pulp that comes from Norway, and that Norwegian bleached sulphite could not be equalled in quality in the United States. American sulphite, if produced of an equal grade, would not be able to compete with the imported article, owing to the cheaper labor available in Norway and the lower cost of wood. Ocean freights are cheap, and taken altogether the imported sulphite is placed on the American market at a price which defies local competitors.

*

PULISHERS AS PAPER OWNERS.

But to return to Mr. C. Arthur Pearson and his Newfoundand property: If this sort of thing becomes fashionable amongst big newspaper proprietors, the outlook will be an unpleasant one for the home-made "news" trade, as well as the Canadian manufacturers of "news"—leaving, of course, the foreign makers out of the question. The Pearson newspaper and publishing properties are heavy consumers of "news," for the production of the Standard, the Evening Standard and St. James' Gazette, the Daily Express, Pearson's Weekly, and the rest of the publications, London and provincial, in the Pearson group, eats into an immense weekly consumption of paper, and it is the most natural thing in the world that Mr. Pearson, for the sake of economy and independence, should desire to become his own papermaker, like Sir Alfred Harmsworth, and the proprietors of the Daily Telegraph and Daily Chronicle. But if the con-

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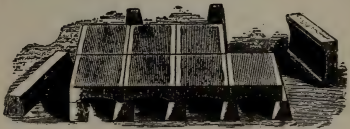

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tagion spreads, and some few more of our larger London and provincial newspaper proprietors follow suit, the market for "news" will wear a different complexion from that which it bears at present.

It is, indeed, quite on the cards that before long more than one big newspaper proprietary will be making their own paper. Whether they will go so far as to manufacture their own pulp as well is, of course, another matter. I hardly think they will, but, if the suggested swing of the pendulum does take place, I should not be surprised to see it followed by a combination of newspaper proprietors being formed, to

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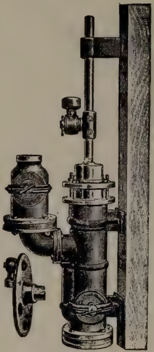

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acquire timber limits in one part or another of British North America, and to manufacture their own pulp and their own paper. If and when any such situation is realized, it goes without saying that the market for home, colonial and foreign "news" will be revolutionized. But that is not yet, anyway, and the market can continue to breathe freely "the noo."—World's Paper Trade Review.

The ratepayers of Sturgeon Falls, Ont., will vote on the 20th on the by-law to exempt from taxation the new pulp mills of the Northern Sulphite Mills, being built as a department of the Imperial Paper Mills of that town. This exemption, which was contemplated in the agreement with the original company, the Sturgeon Falls Pulp Co., is conditional on the business being constantly carried on, and employing not less than 50 hands. In case the mill is

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closed over three months in the year for any cause other than a fire, strike, or other cause beyond the company's control, then taxes may be levied by the town. It is believed the by-law will be adopted.

The Canadian Associated Press representative at the International Exposition at Liege, Belgium, telegraphs that among the awards announced to-day Canada wins eight grand prizes in the following exhibits: Agriculture, forestry, fruits, fish and game, fauna, cereals, minerals, and tobacco. Canada did not compete in the industries, but the Board of Jurors granted, under the classification "Paper-making," honorable mention for Canada's pulp. In the foregoing eight classifications Canada won 30 points in each, or the highest possible. The Board of Jurors pronounce the present exhibit practically perfect, and not eclipsed by any other country.

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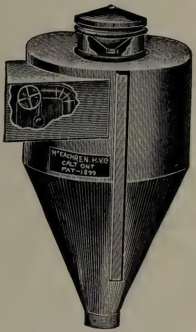

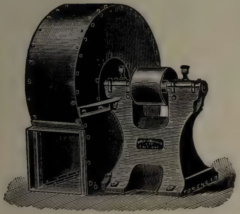

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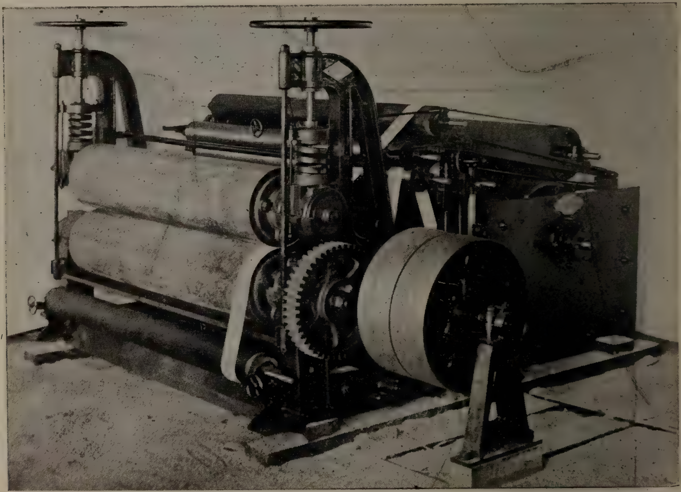

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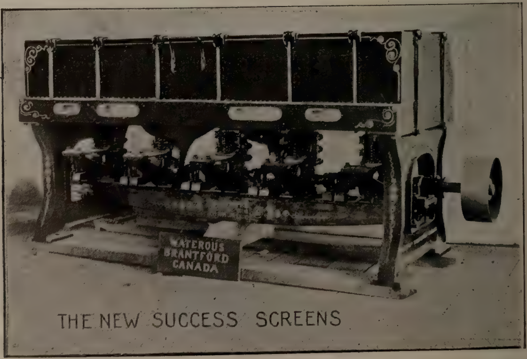

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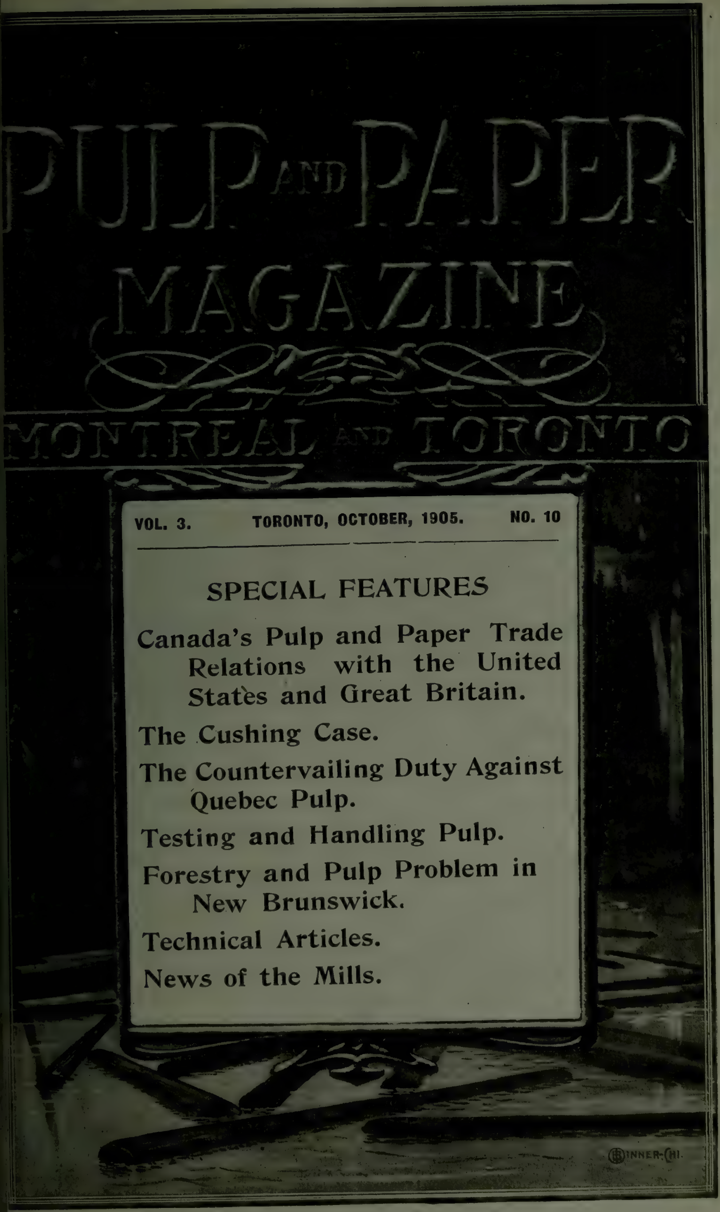

PULP AND PAPER MAGAZINE

MONTREAL AND TORONTO

VOL. 3. TORONTO, OCTOBER, 1905. NO. 10

SPECIAL FEATURES

- Canada's Pulp and Paper Trade Relations with the United States and Great Britain.
- The Cushing Case.
- The Countervailing Duty Against Quebec Pulp.
- Testing and Handling Pulp.
- Forestry and Pulp Problem in New Brunswick.
- Technical Articles.
- News of the Mills.

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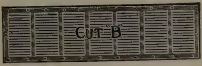

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INDEX TO ADVERTISEMENTS.

Atterbury Bros. 41
Beloit Iron Works 47
Benson & Co., W. T 10
Bentley & Jackson 4
Bertram's, Limited 6
Black-Clawson Co., The 7
Bowater & Sons, W.V 41
Bredt & Co., F. 10
Brunner, Mond & Co., Limited 50
Canada Paper Co. 49
Canadian Fairbanks Co, Limited, The 37
Canadian Rubber Co. of Montreal 8
Carrier, Laine & Co. 46
Castle, Gottheil & Overton 9
Cheney-Bigelow Wire Works 38
Christie, J 50
Christie, Limited, George 3
Cousland & Co., A. 10
Davis & Co., F. H. 42
Eastwood Wire Mfg. Co 2
Emerson Mfg. Co 37
Freese, Jean 3
Hamilton Mfg. Co., Wm 39
Hardy, George F. 9
Hawksworth & Sons Co., Limited, Alfred. 12
Hay Knife Co., Limited, Peter 38
Hough, R. 50
Huyck & Sons, F. C 5
International Pulp Co. 9
Jenckes Machine Co., Limited 12 & 48
Johnson & Sons, Limited, C. H 6
Kenyon & Son, James 43
Klipstein & Co., A. 11
Kimball, Herbert S. 9
Knight & Co., John 45
Lea & Coffiin, and H. S. Ferguson 9
Little & Walker 9
McDougall Caledonian Iron Works, The John 42
McOuat & Son, T. 39
Paton, Thomas L 3
Perrin & Co., Ltd., Wm. R. 42
Porritt & Sons, Joseph 10
Porritt & Sons, Limited, Samuel 50
Porritt Bror. & Austin 6
Pringle & Son, T. 9
Pulp & Paper Trading Co., The 38
Pusey & Jones Co 40
Quebec & Lake St. John Ry. 9
Seymour & Guest 9
Sheldon & Sheldon 45
Smith Co., S. Morgan 49
Snell, Co., Samuel 39
Sullivan & Co., C. F. 10
Union Screen Plate Co 3
Union Sulphur Co., The 43
Vogel, C. H 9
Wallace-Jaastad-Drewson 50
Want Advertisements 39
Waterous Engine Works Co., Ltd 48
Wertheim & Co., A. 44
Whittaker, Richard 11
Wilson, Paterson & Co. 12
Winn & Holland 50
Wurster, Dr. C. 40
Young, J. S 49

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Builders of HIGH-GRADE MACHINERY for

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402 Cordova Street, Vancouver, B.C.

DISSOLUTION OF PAPER MAKERS' ASSOCIATION.

The association of Canadian paper manufacturers, formed for the purpose of regulating prices, has been dissolved. This is the way in which it is recorded by the Ottawa Free Press:—

"After a stormy career the Canadian Paper Makers' Association has been finally dissolved. There were no formalities. The trustees of all the trusts, Kerr and Jenkins, of Toronto, just lost one more valuable client, and each member absolved himself from the $1,000 forfeit. The association was formed somewhat on the lines of the 'combines' which have been legislated against so much in the United States, the chief purpose being to keep up the prices of paper sold to printers and publishers in Canada. At one time the members boasted that it was as strong as the Underwriters' Association, which is the kingpin of all the Canadian combines. Nearly every paper manufacturer in Canada was a member of the association, but the big mills like that of the Laurentide Paper Company refused to have ought to do with the rest of the members very early in the game. In one instance the Laurentide Company were ready to prove a very grave charge against one of the other large mills, and they only desisted when they learned that their rival was seeking to persuade a customer to commit perjury, a customer who owed the offending company a considerable amount of money.

* * *

—The Britannia Paper Co., whose incorporation was mentioned in the June number, has arranged with the council of Port Hope, Ont., to establish its mill there. The old radiator works will be used and $50,000 is to be spent in plant. The company, which agrees to employ 50 hands, will make building paper, paper for boxes, etc. The promoters are T. and C. Brown, of St. Catharines, with G. A. Turner, W. Bullock and F. Sinclair, of Toronto, and the company is capitalized at $200,000.

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SPECIALISTS IN
Pulp and Paper making. F

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Designs, Examinations and Reports in connection with Sulphite and Soda Fibre Mills; and Pyrites Burners for the Sulphite Process. F

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Paper, Pulp and Fibre Mills, Examination of Mill Properties, Water Power Developments.
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"Asbestine Pulp" Filler
Superior to any Clay.
Delivered price on application.
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and H. S. FERGUSON,
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Textile Mills,
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This Railway runs through Two Hundred Miles of the Finest Spruce Forests in America, through a country abounding in Water Powers suitable for Pulp and Paper Mills and other industries, and of easy access to the Steamship Docks at Quebec.

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J. G. SCOTT, General Manager
QUEBEC, P. Q.

CASTLE, GOTTHEIL & OVERTON
41 Park Row, Times Bldg., New York
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Dealers in all kinds of Paperstock, Sizing, etc.
Correspondence Solicited. F

CHINA CLAY **ROSIN,** Best Paper Makers' Strained

Bleaching Powder. Soda Ash.
Ultramarine Blue.

STARCHES*—*Highest Grade Pearl and Potato. FT

W. T. BENSON & Co., 164 St. James St., Montreal.

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FELTS

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SODA ASH, Caustic Soda, 50° to 78°, Caustic Potash, Sal Soda, SALT CAKES, Silicate of Soda, Pearlash, Potash, Sulphur. Also a full line of Resins, direct shipment from the south.

Contracts made for regular supplies. F

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Are specially prepared by oxidation—not "Tanned," and are a perfect hair fibre.

They are impervious to Water of any temperature, or Oil, and make the finest CUP FLANGE and U PACKINGS — for Oil, Water or Air; will not burn under friction, and will wear from 3 to 30 times as long as the best Oak Tanned Leathers. Can be used under any pressure, the higher the better their wearing qualities will show.

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¶ One 350 Horse Power 16 in. and 28 in. x 36 in. Cross Compound Engine, fitted with Balanced Valves. A strong durable Engine exactly suited to heavy saw mill service.

¶ We can finish it up in one week and will sell at a bargain.

¶ Full particulars on request.

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THE PULP AND PAPER MAGAZINE OF CANADA

OL. 3.—NO. 10. TORONTO, OCTOBER, 1905. $1 A YEAR. SINGLE COPY 10c.

Pulp and Paper Magazine

A monthly magazine devoted to the interests of Canadian pulp and paper manufacturers and the paper trade issued between the 15th and 20th of each month.

SUBSCRIPTIONS: Canada, Great Britain and the United States, $1 a year; to Foreign Countries, 5s. a year.

Changes of advertisements should be in the publishers hands not later than the 10th of the month, and, where proofs are required, four days earlier. Cuts should be sent by mail, not by express.

BIGGAR-SAMUEL, LIMITED,
PUBLISHERS
62 CHURCH ST., TORONTO.

PRINTED AT THE OFFICE OF THE MONETARY TIMES
PRINTING CO., LIMITED, TORONTO, CANADA.

PAPER TRADE RELATIONS WITH U. S. AND GREAT BRITAIN.

The latest word from Washington on the subject of the duty on rossed wood going from Canada to the States is that the United States Government accepts the ruling of the Circuit Court of Northern New York in the Myers case and will levy the extra duty on Quebec wood only in case it is cut from crown lands. Rossed wood cut on private lands in Quebec will have only the regular duty, but the United States Government will put upon the importer the burden of proving that the wood imported comes off private lands. Where this distinction has been clearly established the countervailing duties already charged will be refunded. The Washington correspondent of the "Paper Trade Journal" has had an interview with Assistant Secretary of the Treasury Reynolds, and makes the following deduction from that official's remarks: "While the Treasury Department at present acquiesces in the Myers case, it can be stated with authority that the department intends some time in the future to make another case along this line, and special agents of the department in Canada will be instructed to gather such evidence as may be possible for them to secure. In other words, the Treasury Department has been beaten in the Myers case, but hopes to make out a stronger case some other time."

The trade of Quebec merchants who make a business of exporting pulp-wood has naturally been disorganized for the time being by this decision, but other branches of the trade are not disturbed and even the pulp-wood shippers, if they have a little patience, will see that the more restrictions that are put upon the export of pulp-wood the greater will be the ultimate benefit to themselves and the people of the province when the pulp-wood of Quebec is made into pulp and paper at home. A number of United

States companies have rossing plants in Quebec and these will, no doubt, go on shipping rossed wood from the province and paying the extra duty. The others may have to hold a part or all of their wood till 1906, but when the present stocks of wood in the United States mills are exhausted those concerns may find themselves forced to pay $10 or $12 a cord instead of $6 to $8 as at present. Meantime the pulp-wood policy of the new Quebec Government may be so revised as to undo the injury perpetrated by the late Parent administration, while the whole subject of the pulp and paper duties will come before the tariff commission now taking evidence. The still broader question of a forestry policy for the whole Dominion is likely to come up for discussion, if not for decision, at Ottawa at the next session. Considering that the United States derives about a third of its pulp-wood from Canada even the pulp-wood shippers need not distress themselves over the situation.

In view of the fact that the United States duties against Canadian products in the pulp and paper lines are already higher than Canadian duties against United States products, and in view of the fact that recent legislation there seems to be aimed at still further increasing these inequalities, it may be well to review the position of Canada. Suppose, to begin with, these obstructions to fair trade were maintained or increased, and Canada decided to raise her tariff to the United States level? A few figures will show that in such a contest a great deal of trade would be thrown into British and other channels which is now done by the United States.

In the year ending June last Canada exported to the United States goods to the total value of $77,404,071, while the United States exported to Canada goods to the value of $162,738,571, so that if this mutual trade were obliterated the loss of the United States would more than double that of Canada.

As to the paper and pulp trades the relations of Canada to the United States and Great Britain are shown by the following tables, taken from the Canadian returns recently issued. British manufacturers should reflect on the fact that in every one of the 31 items of imports named United States manufacturers are ahead, in most cases by enormous proportions. In most lines the reverse was the case twenty-five or thirty years ago. The change has been brought about more by the apathy of the British manufacturer than by the special suitability of United States goods for the Canadian market. These are the figures:

Canadian Imports, Year Ending June 1905.

	From Great Britain.	From U. S.
Photographic papers...	$ 8,961	$118,822
Paper bags or sacks....	1,536	50,181
Playing cards	18,671	38,844
Card board	8,176	71,700
Envelopes	12,538	62,334
Felt and straw board..	4,557	149,953
Wall papers	13,458	176,101
Leatherboard and leatheroid	......	23,618
Mill board	1,020	38,681
Paper collar cloth.....	......	1,863
Pads, papier mache goods and other like papers	125,794	512,892
Printing paper costing 2¼c. per lb. or less	....	1,484
Other printing paper dutiable at 25 per cent.	166,509	340,846
Ruled, border, coated or boxed papers	26,499	125,703

Straw board at 25 per cent. duty ....$	142	$ 10,786
Paper blind stock......	57	548
Wrapping papers	6,838	33,927
Sand paper	2,450	82,145
All other kinds........	132,178	432,887

Printed Papers and Books.

	From Great Britain.	From U. S.
Books and pamphlets..	$201,961	$723,943
Novels	16,917	83,399
Forms (bill heads, bank note and com'l forms)	13,022	87,420
Posters at 15 per cent..	307	23,554
Labels, tags, etc.	14,914	112,644
Maps, charts, etc......	4,523	12,128
Newspaper supplem'ts.	......	5,386
Adv't'g pamphlets, show cards, etc.	10,210	107,129
Chromos, lithos, etc. (adv't'g)	1,126	1,806
Music	17,211	62,905
Chromos and art work	44,903	232,330

Free Paper Goods Imported.

All kinds	$242,366	$515,139

Canadian Exports.

	To Great Britain	To U. S.
Wall papers	......	$ 749
*Other papers	$940,731	179,861
Books and pamphlets.	52,455	90,959
Wood pulp	680,199	2,694,122
Pulp-wood		2,600,814

As a further commentary on the foregoing tables it may be noted that according to the United States returns in the eight months of the present calendar year, out of a grand total of $5,771,944 worth of paper exported by the United States, Canada took $1,432,247, or about twenty-five per cent., and is now the largest customer of the United States excepting only Great Britain, which exceeded us by scarcely $92,000.

A study of these figures in detail will make it clear that a policy of mutual trade restriction pushed to the extreme to which the United States is tending will not merely stimulate to earlier development the great industry which nature has marked out as Canada's own, but it will shift the balance of trade into the hands of British manufacturers if they are alert enough to see their opportunity.

Pulp & Paper Currency

The suggestion made by the Papier Zeitung, of Germany, that an international society of paper mill chemists be formed is a good one, and Canadian chemists should join heartily in the movement, which has been taken up warmly in Great Britain and the States. Little & Walker, the well-known paper mill chemists of Boston, have kindly offered to correspond with any Canadians interested. The work of such a society will be an unmixed good to the pulp and paper trade of the whole world.

* * *

The acceptance of the Crown of Norway by Prince Charles of Denmark, completely settles the trouble between Sweden and Norway. The people of Scandinavia are eminently sane, and Canadians, though rivals in the pulp trade, can congratulate them upon their self-control. Both Norway and Sweden depend chiefly on the pulp and paper trades for their prosperity, and a war would thus have disorganized the paper trade of the whole of Europe to a disastrous extent. In the event of such a war Canada is the only country that could have been called on to meet the exigency in the pulp trade, but in the long run it is doubtful if even Canada would be benefited by such an unnatural disturbance.

---

* Under this head Canada's total exports to all countries were $1,768,020.

* * *

One British engineering firm has this year turned out what is reported to be the largest paper machine in the world working on news, and another firm has made the smallest paper making machine ever constructed. The dimensions of the former are not given, but the latter is pretty fully described by our London contemporaries. It is only 8 ft. long and 1 ft. wide over all and produces a sheet of paper only 3½ in. wide. It is a complete working model from wire to reel, including beaters, mixing chest, suction boxes, a set of three-throw vacuum pumps, dandy roll, first and second presses, eight cylinders, a stack of calenders and reeling outfit. The drying cylinders are heated by gas through a kind of bunsen burner, and the calenders have a perfect joint not easy to get in a machine of full size. It is made so that it can be driven by steam, gas, electricity or hand power. This machine, which has had many admiring visitors, was made by T. J. Marshall & Co., of Stoke Newington, London. One of the early members of this firm, John Marshall, was the inventor of the dandy roll in 1826, and later members of the firm in 1870 devised the modern process of water-marking, which has come into almost universal use.

THE CUSHING SULPHITE FIBRE CASE.

Before Judge Landry at St. John on the 20th ult. the case of the Cushing Sulphite Fibre Company came up on a summons served on the provisional liquidator, W. E. Vroom, to show why a stay of proceedings should not be granted.

This followed upon the appointment of Mr. Vroom, as liquidator, by Judge McLeod, the Provincial Supreme Court having divided on the appeal from Judge McLeod granting a winding up order, and the operations of the company having forthwith stopped, throwing about 100 hands out of employment. The mortgagees expressed their determination not to allow the liquidator to take possession unless the mortgage of $270,000 together with $110,000 overdue interest was paid, and they held that until the mortgage was satisfied they should manage the property.

Upon the application before Judge Landry, Dr. Pugsley objected to H. A. Powell being heard on behalf of Capt. Partington, as his client was not a party to the summons. Dr. Pugsley thought the object of Capt. Partington and the others was to freeze out Mr. Cushing and the smaller shareholders.

M. G. Teed, for the company, said that they had a right to appeal to a higher court, and it would be absurd to give them the right to appeal without staying proceedings, because otherwise the business could be all wound up before the appeal could be heard. He then asked for permission to appeal, but His Honor said that he would rather he would get his authority from Judge McLeod.

In the course of argument Judge McLeod, who was present, said he had withdrawn his judgment.

Judge Landry in giving judgment, said that he would grant to the liquidator all power except to actually take possession of the property. He had such powers as to examine the books and assets of the company. He, however, stayed proceedings as to taking possession until the 27th, thus giving an opportunity to ask for right to appeal from the Supreme Court of Canada.

The application to the Supreme Court of Canada for leave to appeal from the Supreme Court at Fredericton came up at Ottawa and the following decision as rendered and received by Messrs. anington, Teed and Hanington, solic- ors for the bondholders, on the 27th eptember.

"Re Cushing Sulphite Company, motion efused, with costs fixed at $50. No ppeal per saltum lies. There was no dgment of the judge of first instance appeal from to Supreme Court of rovince. If formal appeal completed om judge's order September 15th to upreme Court of Province the application here may be renewed. No refer- nce to be made to any observations at rgument respecting postponement of reclosure sale, that being within pro- ince of the equity judge before whom roceedings pending in equity to fore- osure."

The motion, says the "St. John Sun," eems to have been refused purely on a echnicality, the court taking the ground at as Judge McLeod had not signed e winding-up order at the time the ase was referred to the Supreme Court, o appeal should be granted, as tech- ically this would be appealing directly om the decision of Judge McLeod, hich, under the statute, they have not he power to do.

It is understood that the case will be gain taken to the Supreme Court at redericton for the purpose of comply- ng with this formality. No evidence vill be taken, it being only necessary or the court to sign the order to make he proceedings regular. This being one, another application for leave to ppeal to the Supreme Court of Canada vill probably be made.

The latest move in the case was made n the 16th inst., when an application vas made by Attorney-General Pugsley efore Judge McLeod to extend the ime fixed for the sale of the Cushing ulp Mill under the foreclosure proceed- ngs. The sale is now advertised to take lace November first, but Judge McLeod as extended the time until May the irst, 1906. Judge McLeod said he post- oned the sale to November 1st without aving any idea that an appeal would be nade to the Supreme Court of Canada and the hands of the liquidators tied. He considered he had a right to rescind that order, considering the special circumstances of the case, viz., insufficient advertising in the first place, the trustee for the mortgagees in possession of the property under a doubtful right, and the fact that the directors had cancelled contracts made by the company since the winding-up order. These and other circumstances were exceptional. He therefore granted the application.

Notwithstanding these legal complications the "St. John Sun" reports that the mill would be re-opened on the 17th and run to its full capacity.

PERSONAL.

Robt. S. Hall, for twelve years with the Riordon Company, and for the past several years superintendent of the pulp mill of the Riordon Paper Mills, Limited, at Hawkesbury, Ont., has resigned. Mr. Hall though only 35 years old has spent nearly the whole of his life in paper and pulp making, having learned the business in Devonshire, Eng. He came to the States in 1891, and was appointed superintendent of the paper mill at Ticonderoga, N.Y., coming from there to Canada. He is succeeded by Mr. Spaulding who recently came to Hawkesbury from the States.

Thomas McCormick, a paper maker, well-known in Canada and the United States, died at Sprague's Falls, Me., on the 26th ult., where he had recently gone to complete the installation of the plant of the large new paper mill. Mr. McCormick had much to do with laying out and installing the plant of the Imperial Paper Mills at Sturgeon Falls, of which he was superintendent for a time till he took up the work at Sprague's Falls. He was 58 years of age, and was not only an able manager but personally popular. He is succeeded in the superintendency of the Imperial Mills by his son, Daniel McCormick.

H. B. Donovan, manager of the Toronto branch of the Canada Paper Company, has returned from a fortnight's visit to New York.

John Craig, president of the Imperial Paper Mills, Sturgeon Falls, and Carl Riordon, of the Riordon Paper Mills, Merritton, were in Toronto on the 19th inst.

Henry J. Bradley has left the employ of the Lincoln Mills Paper Company to go into the foundry business, he and two others having bought the old Stuart foundry near St. Catharines.

Harry B. Wood, a well-known pulp merchant of Manchester, Eng., spent a couple of days in Toronto this month on his way to Niagara Falls and New York. Mr. Wood was accompanied by his wife.

Edward Trout, secretary-treasurer of the Toronto Paper Manufacturing Company, has returned from an extended tour in Great Britain and Europe. After remaining in Canada for about a month Mr. Trout will go to his winter home in Florida.

Henry Tyrer, of Henry Tyrer & Co., shipping agents, of Liverpool, London, and Preston, is on a visit to Canada. Mr. Tyrer handles most of the pulp shipped from Canada to the British market and is visiting the pulp shipping ports, such as Chicoutimi, Quebec, Three Rivers, etc. He expects to sail for England about the end of this month.

Geo. D. Kelley, has been in Canada for the past month, having been sent out from England by the testing house of the Manchester Chamber of Commerce to look into the vexed question of discrepancies between the Canadian shipper and British buyer in the estimation of moisture in pulp. Mr. Kelley is visiting Chicoutimi, the mills of the Lake St. John district, Shawinigan Falls, the Ottawa district, and other points, and will report minutely on the methods adopted in Canadian mills.

E. Stewart, superintendent of the Forestry Branch of the Department of the Interior, has returned to Ottawa from a trip to the North-West and British Columbia. While in New Westminster he delivered a lecture on forestry, the chairman of the meeting being Sir Henri Joly de Lotbiniere, Lieut.-Governor, who has always taken a deep interest in the subject. Mr. Stewart reports that mucn attention is now being paid in the West to the question of conserving the present forests and creating new ones. At the Indian Head experimental farm over two million young tree plants are being sent out to 1,500 farmers, who have applied for them.

NEW INCORPORATIONS.

W. J. Woodburn & Sons, Montreal, have been incorporated with a capital of $49,000. W. J. Woodburn, E. J. Woodburn, R. F. Woodburn, I. Woodburn, Westmount; and A. P. B. Williams, Montreal, are the first directors. The company will carry on the business of printers, die sinkers, lithographers, etc.

A company has been formed at Toronto under the name of E. H. Harcourt Co., capital $100,000. E. H. Harcourt, T. Chapman, J. W. S. Corley, P. G. Price, E. M. Harcourt, Toronto, are first directors, and the company will carry on business as printers, lithographers, etc.

G. M. McDonnell, A. B. Cunningham, W. Gill, A. E. Shannon, Kingston, Ont., have been incorporated as the Kingston News, Limited, capital $40,000, to carry on business as printers, publishers, etc., taking over the Kingston "Daily News."

BRITISH AND FOREIGN PULP MARKET.

In the British market mechanical pulp is very firm, especially for this year's delivery, and prices of sulphite still tend upwards. Of the latter very little is obtainable for this year, and soda pulp is also scarce.

Mechanical, 50 per cent. moist, is quoted at £2 5s. to £2 7s. 6d. or £4 16s. to £5 for dry. Dry unbleached sulphite is £9, and bleached £12 to £13. Soda, bleached, £12 5s.

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Of the Scandinavian markets C. E. Sontum, Canadian commercial agent at Christiania, writes under date Sept. 5th: The market for cellulose is still very firm, both for delivery this year and the next year. There are only a few mills which have small lots left to sell for this year, and many mills have already sold out the whole of their next year's production. There are, however, several new cellulose mills building both in Norway and Sweden, and when they begin to operate, it will undoubtedly exercise a strong influence upon the market.

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The Swedish paper, "Affarsvarlden," of Sept. 22nd, reports on the British market: The rising tendency in mechanical pulps reported a fortnight back seems to be arrested for the moment by rumors of large quantities of Canadian pulp to be had at several shillings below present quotations from Scandinavia, and some sales of Canadian are already reported to have been made. It would be a great pity if good Canadian pulps are being thrown away at less than present market value, but judging by past experience of similar rumors, one may probably in all safety assume that the quality concerned is of a lower or more irregular grade, and the pulp consequently of less value, than ordinary Scandinavian first qualities. Furthermore there is always a tendency in cases of this kind for the quantity to be exaggerated, and pulp makers will probably want more information before taking the matter too seriously. At the same time, they will find it well to bear in mind that the Canadian competition is always waiting, ready to step in when prices for mechanical pulp begin to be anything like remunerative. Some of the British paper makers have been taking trips over Scandinavia to find out what they can for themselves, and have met with great firmness amongst the pulp mills there, who should now seem to be in an especially good position for holding their own. A few enquiries for 1906 contracts are about, but there will probably be more shortly, some paper makers being still away on holidays.

* * *

A British View of Canadian Trade

On his return to London from Canada F. E. R. Becker, of Becker & Co., wood pulp agents, gave to the "World's Paper Trade Review" his impressions of the situation in Canada:

"There is a decided scarcity in mechanical wood pulp, and a slowness in the demand," remarked Mr. Becker. "During the last six months there was a shrinkage of some 30,000 tons in the imports from all sources into this country, compared with the corresponding six months of last year, and one would naturally imagine that paper makers were either short of orders and worked short time—of which I have heard nothing—or they must be bare of stocks to such an extent unprecedented in the trade.

"Mechanical wood pulp has been maintained at far too low a rate for the last nine years, making allowances, of course, for the sensational rises during the war periods. Mills favored with a small capitalization cannot turn over their capital under two years—f.o.b value of their product. Then, it must also be considered that some mills are called upon to make a heavy expenditure to provide for their wood supplies.

"As to the future it is difficult to speak. Unless there is any great overproduction—not equalized by the demand—higher prices will rule. Further, any revival in the 'news' trade will keep prices stiff."

In reply to a query as to Canadian imports, Mr. Becker said the shipments of

Canadian mechanical to this country were likely to gradually expand.

Speaking of the mills he visited in Nova Scotia Mr. Becker said: "The mills of the Acadia Pulp and Paper Co. are at work under the management of John Hughes, an old English paper maker. There were three mills owned by the company, but one was sold to La Have Pulp Co., which is run in conjunction with a new mill (rebuilt after a fire) by the Nova Scotia Wood Pulp and Paper Co. The only mill that has ceased to operate in Nova Scotia is the Sissiboo, which was bought by the Campbell Lumber Co., who are interested in the new mill which has just commenced to manufacture."

"A beautiful plant," said Mr. Becker, "is to be seen at the new mill of the Price-Porritt Pulp Co., Quebec. It carries its product on an aerial railway, which runs a distance of about three miles to sea water. The mill contains six grinders. The pulp mill at Ouiatchouan Falls, also contains six grinders, and the feature of the establishment is the extraordinary head of water—297 feet. This natural fall gives a pressure of 100 lbs. all over the mill. The product is shipped both to the State and to this country."

And what about the Chicoutimi mills?

"The big mill," said Mr. Becker," is the finest mill I have seen. There are twenty grinders, and everything is new. The capacity is 90,000 tons of moist pulp per annum. The daily output at present it 200 tons, whilst the smaller mill—the old one—has nine grinders, with an output of 45 tons dry; a further grinder will be added this winter."

The product of the Chicoutimi mills is largely imported into this country, through the agency of Becker & Co.

"Practically the only recent development is the Seven Islands scheme, which is hoped to be completed in a year's time. Already large sums of money have been expended. It is proposed to put down a 45-grinder mill, capable of producing 150,000 tons of pulp. What effect such a large plant will have on the market must be left to time to decide as operations will not be possible next season."

Upon the vexed question of excess moisture, he said: "Canadian manufacturers feel very sore on the matter, and welcome any steps likely to remove present misunderstandings. As matters stand, the Canadian manufacturer is convinced that he is being robbed, and the British paper maker is under the same impression. The present method of settling disputes is unsatisfactory, and the steps taken in this country to arrive at the true contents are far from what could be desired. For instance the paper maker does not care to have a chemist more than one day at the mill, and strenuously opposes a test of more than 4 per cent. of the bales. Facilities for testing at the ports where the pulp is landed, also leave much to be desired."

* * *

—H. L. Kerr, who has charge of a party of surveyors in the Abitibi region has forwarded to the Ontario Bureau of Mines a report of the season's work. The Metagami is a fine stream 100 yards wide in the upper part, increasing to double that width in the lower reaches, and having several water falls or rapids. There is good agricultural land in many sections. Spruce and Jack pine are the chief trees, while to the north of this area clay soil again prevails. The report dealing with the Northern sections says: "Black spruce, rather under the average size, makes up the greater part of the forest, although some fine white spruce and frequent stretches of magnificent poplar, balm of Gilead, and white birch were observed. By far the best country, from an agricultural point of view, seen during the summer, is that section lying west of the Metagami, and between Niven's third base and Speight's second base. Here the timber is larger and the land drier, being drained by three rather fair-sized rivers. It is this section through which the Grand Trunk Pacific is most likely to be built, as survey parties are at work here."

Use of Fillings

It may be thought that if a filling is only white, it can always be used for any and every kind of paper, and that if whiteness and cheapness go together, the selection of a filling is not such a difficult matter. This view is, however, by no means correct, as the nature of a filling plays a very important part. In my examination of a large number of printing and writing papers I have gained much information respecting this fact, and the reason why one particular material and not another should be employed is comparatively easy to understand.

We need only consider here three most commonly used fillings, namely, china clay, gypsum, and heavy spar, as they are the cheapest, and also possess the characteristic properties which I wish to discuss. Abestine and talc are also much used, it is true, but the use of these fillings is confined almost entirely to high-class papers, the absolute whiteness of which is the principal desideratum. The main question for every analyst is, How can these three substances be most quickly identified? As every paper chemist possesses a microscope, he is consequently in a position to carry out easy microchemical analyses, which in the present case are most decidedly to be preferred to those on a larger scale.

To identify china clay, the well-known ignition test with the ash and treatment with a drop of cobalt nitrate, which produce as blue color, the cobalt ultramarine or Thernard's blue may be employed, and is easily carried out with the coherent ash. Gypsum is most rapidly identified microscopically. As, however, gypsum which has been ignited is only soluble with great difficulty, it is better to work with the unignited paper. A fragment of the paper is boiled with a drop of distilled water, and the water renewed until the paper is thoroughly extracted. After gentle evaporation, the concentrated drop of gypsum solution is allowed to cool, when fine crystals will deposit round the edge, and which may be readily recognized even on slight magnification. The long needles with their characteristic points can be easily seen, and are a sure and certain proof of gypsum. No reagents whatever are required to detect this substance; and with a little practice the operation can be very quickly and accurately carried out.

Heavy spar causes the investigator somewhat more trouble, but after a little practice the manipulations can be performed quite easily. A minute quantity of the ash is taken and boiled with a drop of concentrated sulphuric acid on the slide. This operation will at first be found difficult, as the drops run off and the slides easily crack with the heat. A few attempts will nevertheless overcome these little troubles. When sufficiently boiled, the preparation is allowed to cool, the dissolved barium sulphate crystallizing out but very slowly. The crystals are, however, visible in a few minutes, and take the form of minute stars.

Having thus indicated how fillings may be rapidly detected, we may now proceed to discuss their properties. There are papers which it is desirable should be opaque, whereas others must be as transparent as possible; again, others must be hard and tough, while some papers must be soft and lie as flat as possible. All these requirements cannot obviously be fulfilled by one particular filling. The best results will be obtained by taking not only the composition of the stuff, but also the nature of the filling into consideration. Take, for example, a paper which must be produced as cheaply as possible, and must yet be fairly hard and bulky. Papers of this kind will be invariably found to be made with a mixture of china clay and gypsum, these being the two cheapest; moreover, gypsum imparts a peculiar hardness to a paper. I have always noticed that papers which were fairly heavily loaded and yet bulky, invariably contained gypsum, whereas heavily loaded papers which contained china clay only were of a soft, limp nature, and could only be used for printing purposes.

Writing papers which it is desired should be resonant, should be preferably prepared with gypsum. The look-through is also better and clearer when gypsum is used. China clay always dims the transparency. It is better, however, to mix the two fillings together, as gypsum alone causes too much loss, and is consequently unprofitable. As a rule, gypsum, on account of its solubility, entails more loss than the other fillings. To produce opacity in thinner paper, such as thin printings, it is preferable to use china clay. In chromo papers the chief requirement is that they shall lie perfectly flat, and to this end a very heavy filling should be chosen, which will compel them to do so by its high specific gravity. The best filling for this purpose is heavy spar, and many excellent chromo papers which I have specially examined for fillings contained heavy spar.

It is manifest that a unit weight of heavy spar will occupy a much smaller volume than a similar quantity of china clay or gypsum, and for this reason a fairly high percentage of heavy spar in a paper will be less prejudicial to the felting of the fibres than would be the case with a specifically lighter material. For the same reason also the transparency of the paper will be comparatively clear and the tensile strength greater; the thickness, however, is slightly less for the same weight per square metre, while the total specific gravity will have increased. Heavy spar may also be detected by a much shorter method, without a microscope. As with coated papers, it is only necessary to make a streak on the paper with a gold ring, and a distinct grey mark will be produced.

As a rule, the fillings which are individually most suitable for a given kind of paper are: gypsum for papers which must be resonant and tough, china clay for opaque papers, and heavy spar for fine printing and chromo papers, which must lie flat readily. In working to pattern the manufacturer should always see that the nature of the filling is ascertained, and as the operation as above described is not difficult and does not take up much time, it can easily be carried out by most paper chemists. — E. L. Selleger, in Der Papierfabrikant.

Notes on Wood=Pulp for Papermaking

(London Times Engineering Supplement.)

The class of wood generally used for the manufacture of chemical pulp is known as soft wood, and belongs to the order Coniferæ, or cone-bearing trees. The common spruce and the silver fir are the chief species that supply the chemical pulp of Europe, while the white spruce, black spruce, Canadian hemlock, white American pine and the silver fir furnish the bulk of wood-pulp in America. For mechanical wood-pulp, poplar, aspen, spruce and fir are mostly used. Although almost every class of wood can be converted into pulp, only the soft coniferous trees are economically suitable.

In an essay published by Réaumur in the eighteenth century there is a suggestion that it might be possible to make paper from wood, and in 1750 paper was made from the bark, leaves and wood of various trees in France. The first time, perhaps, that wood was used to any appreciable extent in the manufacture of paper was when Koops published his book, in 1800; but at that period it could not be made to compete successfully against rags. The European wars had the effect of raising the price of rags at the beginning of last century, so much so, that there was a law which prohibited the burial of the dead in linen shrouds.

The development of papermaking from wood-pulp has been recently dealt with in a very able manner by Mr. S. Chas. Phillips, M.S.C.I., in a paper read by him before the Society of Arts. This paper is of a very exhaustive character, and is worthy of close study by those interested in the subject.

Mechanical Pulp.

The author states that the art of reducing wood to pulp by subjecting the same to the action of a revolving stone is not a new one, machinery for grinding wood while a current of water was applied to the stone having been patented in France by Christian Voelter as early as 1847 (see "Brevets d' Invention," Vol. X., second series), and in England by A. A. Brooman, of London, in 1853 (see "Repertory of Patented Inventions" for May, 1854, p. 410).

A large number of inventions for cutting or grinding wood into pulp have been patented; but the enormous development of the paper-making industry, and the cheapening of paper during the last fifteen years are largely due to the general introduction of the machine for disintegrating blocks of wood and assorting the fibres so obtained into classes according to their different degrees of fineness, invented by Mr. Henry Voelter, of Heidenheim, Würtemburg, Germany, and for which invention he received letters patent on August 10, 1858, from the United States.

In all the processes known or used prior to Voelter's invention the wood had been acted upon by the stone in one or two ways, viz., either by causing the surface of the stone to act upon the ends of the fibres, the surface of the stone moving substantially in a plane perpendicular to the fibres of the wood; or, secondly, by acting upon the fibres in such a direction that they were severed diagonally, the surface of the stone moving diagonally across the fibres. The first plan, in fact, made powder of the wood—an obviously unsatisfactory result. The pulp had no practical length, and on trial proved worthless, or nearly so. The second plan was carried out by the use of a stone revolving like an ordinary grindstone, the wood being applied upon the cylindrical surface thereof, the fibres perpendicular, or nearly so, to planes passing through the axis of the stone and the point or locality where the grinding was performed; and this plan also failed, because the fibres were cut off in lines diagonal to their own length, and were consequently too short to make good pulp. There were other difficulties attending the process not necessary here to mention. Such was the state of the art prior to Voelter's invention; and his improvement in the art consists in grinding or milling away in detail from the bundles of fibres which make up a piece of wood by acting upon them by a grinding surface which moves substantially across the fibres and in the same plane with them. In carrying out this improvement upon the art Voelter splits a log of wood and applies the flat side upon the stone, and then the stone so revolves as to cause points upon its surface to pass the fibres in lines perpendicular, or nearly so, to the length of the fibre. By this mode of procedure it is possible to obtain a sufficiently long fibre, and save much power. Voelter's improvement in the art consists, further, in regrinding the fibres by causing them, after being separated from the block, to pass under other blocks of wood, which are being reduced to pulp upon the same stone. The fibres torn out at the first operation are thus rolled over and crushed again and separated into smaller fibre.

Voelter's improvements in the machinery are in an arrangement of pockets with reference to the grinding surface, so as to hold the blocks of wood in such position that their fibres may be separated from the blocks in the manner described, and whereby fibres may be reground, and in a contrivance for feeding up the blocks by a positive feed instead of by force derived from weights or springs, as formerly practised; and a contrivance for causing the feed to cease automatically.

On May 22, 1866, Mr. Voelter was granted another patent for improvement in his machine for reducing wood to paper pulp, which patent was re-issued on April 23, 1872.

Chemical Pulp.

A great change took place in the manufacture of paper on the development of the sulphite process. This process consists in treating chips of wood under a pressure of about seven atmospheres with a solution of bi-sulphite of lime or magnesia for a period of from eight hours to three days. The first patent was undoubtedly taken out by Benjamin G. Tilghman, of Philadelphia, in 1867. His original specification practically covers the various methods employed by subsequent inventors. He started by boiling in lead-lined cylinders. Although an excellent fibre was obtained the engineering difficulties rendered it necessary to abandon his original process.

The preparation of wood for the chemical process is somewhat similar to that employed in preparing the wood for grinding. The wood is brought from the river or from the stacks in the mill yard, sawn into suitable lengths, passed through the barking machine, then through the knotting machine, afterwards fed into the chipping machine, which, at a great rate, reduces the wood into small chips. It is then screened, and any further knots which appear are removed, and then the wood is taken along by a conveyor from the screens to the top of the digester house, and fed into the digesters through the man-hole at the top.

C. D. Ekman, a persevering Swedish chemist, who died last year at Gravesend, appears to have been the first to make a commercial success of the sulphite process. He set to work in 1872, using a solution of bi-sulphite of magnesia. His process was worked secretly until about 1879, when it was introduced into the Ilford mills, near London; after which, in 1884, the proprietors of the patent erected large mills at Northfleet, where the process was conducted by the Ekman Pulp and Paper Company, and was finally abandoned in this country in 1903-1904, it being no longer possible to compete with foreign countries, on account of the cost of timber. For a similar reason practically all other British pulp mills have been compelled to cease operations.

Statistics.

In 1903, we imported into Great Britain 211,823 tons of chemical dry pulp, for the stated value of £1,842,082. This came chiefly from Sweden and Norway, and only 1,356 tons were sent to us from British possessions. Of chemical wet pulp we introduced, in 1903, 21,279 tons, almost entirely from Sweden and Norway, and value was £82,012. In the same year we imported mechanical dry, 8,268 tons, of the value of £30,192; and of mechanical wet, we imported, in 1903, 336,788 tons, of the value of £752,297.

It is worth noting that Canada supplies us with a by no means insignificant portion of the mechanical wet pulp.

In 1901 Canada sent us 48,551 tons, and in 1903 Canada supplied us with 71,664 tons of the value of £157,918. In this class of pulp Sweden, in 1903, sent the pulp of the value of, roughly, £101,000; but Norway received £490,949 for the mechanical wet wood pulp sent to us for that year.

According to official figures, British paper-makers paid: In 1903, £1,642,082 for chemical dry pulp; £82,012 for chemical wet; £30,192 for chemical dry, and £752,397 for mechanical wet, being a total of £2,506,583.

Countervailing Duty on Quebec Pulp

New York Judge's Decision.

(Paper Trade Journal.)

The decision in the countervailing duty case was filed last month in the Northern District of New York. Judge Ray, in his review of the appeal, affirms the decision of the United States Board of General Appraisers, which was adverse to the importers on all points. Unless the case is appealed therefore and the findings of Judge Ray overruled by the United States Circuit Court of Appeals all importations of mechanically ground wood and chemical wood pulp, bleached or unbleached, made from wood cut on Crown lands in the Province of Quebec, Canada, will continue to pay 25 cents per ton in addition to the regular import duties.

In his decision Judge Ray agrees with the Board of General Appraisers that the rebate of 25 cents per cord allowed by the Province of Quebec on all wood cut on Crown lands when that wood is made into pulp anywhere in Canada is in effect an export duty. The fact that the Canadians call it a rebate on the license fee charged for cutting the wood makes no difference, the judge holds. "The merchandise," he says, "cannot escape our law because we call it an export duty and Quebec or Ontario calls it a license fee. The question is, what it is in effect and in fact."

The decision in full is as follows:—

UNITED STATES CIRCUIT COURT, NORTHERN DISTRICT OF NEW YORK.

In the matter of F. W. Myers and Company for a review of the decision of the United States General Appraisers concerning countervailing duty on wood pulp.

This is an appeal from a decision of the Board of General Appraisers, rendered February 17th, 1904, imposing a countervailing duty on wood pulp imported from the Dominion of Canada.

Albert H. Washburn for the United States. Henry J. Cookingham for appellant. Ray, District Judge.

This appeal relates to protest 58943-B, 59372-B, 59489-B, 58164-B, 58162-B, 58160-B, and 59940-B, countervailing duty on wood-pulp.

Subdivision 393 of the Tariff Act of 1897 reads as follows:—

"Mehanically ground wood pulp, one-twelfth of one cent per pound, dry weight; chemical wood pulp, unbleached, one-sixth of one cent per pound, dry weight; bleached, one-fourth of one cent per pound, dry weight. Provided, that if any country or dependency shall impose an export duty on pulp-wood exported to the United States, the amount of such export duty shall be added, as an additional duty, to the duties herein imposed upon wood pulp, when imported from such country or dependency."

The wood pulp in question came from Canada as an importation into the United States.

The board held that pulp manufactured in Ontario from wood cut from public lands in Quebec was subject to the countervailing duty; that pulp made from wood cut from public lands in Quebec was subject to the countervailing duty; that pulp made from wood cut from public lands in Quebec and manufactured in Quebec was subject to the countervailing duty; that pulp manufactured either in Quebec or Ontario was not subject to the countervailing duty, and that as the pulp could not be segregated but the proportions could be established by a percentage, the entire importation was not subject to the duty, but only the percentage of pulp which was made from wood taken from public lands.

The importers contend:—

First.—That the Government has no right to impose a countervailing duty upon pulp imported from any part of the Dominion of Canada.

Second.—That in any event the countervailing duty cannot be imposed upon pulp manufactured in Ontario from wood cut on public lands in the Province of Quebec.

Third.—That in no event is the countervailing duty leviable on pulp imported from Quebec, except as to the extent that it is made from wood cut on public lands, and upon which there has been a reduction of the stumpage dues.

The Dominion of Canada is divided into provinces, among which are Ontario and Quebec.

By the British North America Act (Chap. 3 of 30-31 Victoria) the Dominion of Canada has exclusive power to impose export or import duties. But in sections 91 and 92 of that Act we find in the distribution of powers among the Provinces that it is provided each Provincial Legislature has the following power of legislation: (1) Power of direct taxation within the province in order to the raising of revenue for provincial purposed. (2) Management and sale of public lands belonging to the Province and of the wood and timber thereon. (3) Shop, saloon, tavern, auctioneer and other licenses, in order to the raising of the revenue for provincial, local or municipal purposes. I think each province has the power of taxation by way of license in those matters confided to it. If in the exercise of this power lawfully granted, whether by the Mother Country direct or by it through the Dominion, the Province in point of fact and effect imposes an export duty on pulp-wood exported to the United States, it is an imposition of that duty by the Dominion of Canada. There is no question that the Dominion of Canada is a dependency of the Kingdom of Great Britain.

I do not regard it necessary to recite the various laws, etc., bearing on the subject. In effect, by authority of law, an export duty is imposed. It is not done directly by the Kingdom of Great Britain or directly by the Dominion of Canada, but it is done under legislation authorized by the Dominion.

I cannot agree with the reasoning that arrives at a conclusion that this is not a duty imposed by a dependency of the country we call England, one of the great powers of the world. It is not called an export duty by that Dominion, but is imposed as a license fee. The merchandise cannot escape our law because we call it export duty and Quebec or Ontario calls it a license. The question is what is it in effect and in fact.

The decision of the Board of General Appraisers is affirmed.

The protests which led up to the decision of Judge Ray were filed in the early part of 1902, when the Treasury Department first instructed the collectors to assess the additional duty. A hearing was held November 7th, 1902, on the prospects of the Sault Ste. Marie Pulp & Paper Company, and the Hollingsworth & Whitney Company as test cases. In its decision on these cases, rendered March 23rd, 1903, the Board of General Appraisers held:

"First, that the additional duty was properly imposed by the collector upon wood pulp exported from Quebec, and the action of the collector in this particular is affirmed.

"Second, the Province of Ontario levies no export duty upon wood pulp exported from its limits, and therefore the additional duty imposed by the collector upon the merchandise from that province was improperly assessed, and his decision on that point is reversed, and he is instructed to reliquidate the entry so as to assess no additional duty."

The merchandise covered by the Hollingsworth & Whitney Company protest, as shown by the testimony, was unbleached chemical wood pulp manufactured in the Province of Quebec. That of the Sault Ste. Marie was ground wood manufactured in and exported from the Province of Ontario.

In the decision on these test cases the board said that the assessment of 25 cents per ton was made by the collector on the ground that one cord of pulp-wood will produce one ton of ground wood pulp, or about 1,400 pounds of chemical wood pulp. As the Province of Quebec charges a license fee of 65 cents per cord on all wood cut on Crown lands, with a rebate of 25 cents per cord if the wood is manufactured into paper pulp in the Dominion of Canada, the amount of the rebate was constructed as tantamount to an export duty. Since Ontario does not allow the cutting of its Crown land woods except on the condition that it be manufactured into pulp in Canada, the board said it followed that that province did not impose any export duty.

In view of the fact that the pulp covered by most of the protests was made partly from Crown land and private land timber, the question arose as to how the percentage of that made from the Crown land could be determined. On this point the contention was made that if any of the importations were liable to a countervailing duty, this duty could be assessed, only upon such fractional portions of the wood pulp as was manufactured from pulp-wood cut on Crown lands in Quebec. The board concurred in this contention, and set a date for hearing, so that representatives of the Canadian mills concerned could testify as to the quantities of Crown land and private land wood used by them. The percentage of each used was applied to the shipments under protest and served to fix the proportion upon which the additional duty should be paid.

As two of the importations covered by the protests were made of wood cut on Crown lands in Quebec, but manufactured into pulp in Ontario, objection was made to the assessment of the additional duty on these importations. The Board, however, held that these were liable to the duty, as the wood from which they were made was entitled to the rebate, since it was made into pulp in Canada.

* * *

Handling and Testing Pulp

Thomas Hadfield in "Paper Making," London.

The following is my idea of the best methods for dealing with chemical and mechanical wood pulps:—

1. Weigh each consignment.
2. Sample and test the amount of moisture in each consignment.
3. Store with care.
4. Prepare the different kinds of pulp before placing in the beater.
5. Chemically test for the best kinds of pulp.

Weighing.—Each consignment should be carefully weighed, as the pulp is generally bought as containing a certain quantity of moisture—10 per cent. for chemical and 50 per cent. for mechanical; so that the weight of each consignment when received at the mill is an important item.

Sampling and Testing for Moisture.—Two per cent. of a consignment should be sampled and tested. Bales of the average condition should be taken from a 2-cwt. bale and five from a 5-cwt. bale, thus:—

If both kinds of pulp are bought for bone-dry, these kinds should also be tested for overplus of moisture.

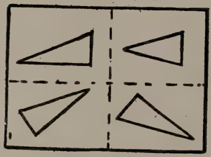
Prices of pulp should be cut out of each sheet in this manner:—

When 2 per cent. of the pulp has been sampled in this way, the small pieces which have been cut out of the sheets should be torn into smaller pieces and then well mixed together. Next take and weigh 2 lb. of the mixed pulp, and place the same in the brick oven, which should be heated to no higher a temperature than 100° C.; leave in the oven from four to five hours, and then take out and weigh again, and the difference from the first weighing will be the amount of moisture in the pulp.

It is sometimes necessary to place the pulp in the oven again for about one hour until all moisture is disposed of. The weighing should be done very minutely. If the pulp has been bought for 50 per cent. pulp, then the sample should not lose more than 1 lb. of moisture in the drying; if it loses more, then there should be an allowance made by the seller for the overplus of moisture.

Chemical pulp, which is generally bought as containing 10 per cent. of moisture, is tested in the same manner. What is known as bone-dry pulp is very seldom met with firsthand.

BALE OF PULP.



SHEET OF PULP.

Storing.—Mechanical pulp should be stored in as dry a place as possible, and the best kinds (such as pine and poplar) should be separated from the inferior grades.

Chemical pulps should also be stored in a dry place and sheltered from any moisture. The bleached and the unbleached should be separated, as there is a great amount of difference in these pulps for the various kinds of paper.

Methods of Preparing for the Beater. —Mechanical pulp, if it afterwards passes through the willow, is frequently boiled for three hours in a revolving kier at a pressure of from 10 to 15 lb., and from five to six hours if it is taken directly to the beaters. At the end of the boiling process the water is let off and the kier emptied. If the pulp passes through the willow, it is broken up to the consistency of breadcrumbs, and is carried direct to the beater by means of small buckets which are fixed to a belting arrangement (or conveyor). By this process a large amount of time is saved in the beating; but many of the best fibres are cut instead of being milled out in the beating engine.

Chemical Pulp.—Washing, breaking and bleaching are generally conducted in the potcher. The potcher consists of roll and bed plates similar to the beating engine. It also has a drum washer, which assists in cleansing the pulp. In order that the pulp shall be strong, flexible and clean, the plates should be dull, and plenty of time allowed so as to tease the fibres out and not cut them. If it is necessary for the pulp to be a good color, a 3 per cent. solution of bleaching liquor should be used at a temperature of 100° F. Three hours in the potcher is generally sufficient for all-round use (such as news, casings and parchments), and also for the various transparent papers.

To test whether the pulp has been washed sufficiently, so that it contains no chlorine, place a strip of white blotting paper (which has been saturated in a solution of starch and iodide of potassium and then dried) into the pulp and if it turns blue there is still chlorine present. Washing should be further resorted to until the test papers do not turn blue. Then the pulp is run into the drainers and a large portion of the moisture is drained from it. It is afterwards taken in boxes to the beaters. A potcher of bleached sulphite and unbleached is in some mills done alternately and kept separate in different drainers.

Chemical Tests for Pulp for Denoting Which Contains the Most Impure Cellulose.—Those pulps are the best which contain the least amount of lignin (which is non-cellulose material).

Aniline sulphate turns it yellow—the deeper the color the greater the amount of lignin.

Phlorglucinol gives a pink color, and the deeper the color the more lignin is present.

Sulphuric acid turns an impure cellulose black, and a pure cellulose is not affected by it.

Aniline hydrochloride turns it yellow.

This is one of the best solutions of testing the amount of lignin in any kind of wood pulp: the deeper the color the more impure the cellulose. If there is no change in color it may be considered a pure cellulose.

A paper-making material is valued by the amount of pure cellulose got from it, and not from the bulk of raw material.

* * *

Germany's Paper Trade

The British Consul General sends an interesting report on the paper trade of Germany for the year 1904. A very large export trade is carried on in paper and cardboard goods, the quantity in 1904 being 2,506,373 met. centners (one met. centner equals 220 lbs.). The imports, which fall considerably below the exports, last year were 952,704 met. centners.

The value of the exports of paper and cardboards in 1904 was 134,083,000 marks, in 1903, 121,903,000 marks, and in 1902, 109,322,000 marks. The imports in 1904 were of the value of 24,755,000 marks, in 1903, 18,067,000 marks, and in 1902, 15,207,000 marks.

The Consul points out that the development of the export of paper and card board goods is irregular. The export of half-finished and rough goods, as well as that of colored and gilt paper, is receding. The export has increased for new articles such as photographic papers, wall papers and paper goods. Formerly wall papers were imported in great quantities, but during the last decade or so German industry has tackled this article with great energy and has gained an increasing influence at home and in foreign markets. The exports of books, prints, etc., testifies not only to the high standing of the German printing trade, but also to the economic importance of German literature.

The export of paper to the United Kingdom during the ten years mentioned were:

	Quantity in 100 Kilos.	Value in 1,000 Marks (£50)
1903	584,078	30,628
1902	559,662	26,266
1901	428,991	24,732
1900	572,315	30,467
1899	470,333	23,075
1898	500,714	25,256
1897	563,572	25,722
1896	610,545	29,335
1895	624,657	32,968
1894	590,818	31,204

Among German articles exported to the United Kingdom in steadily increasing quantities is wall paper. In 1903 the quantity (expressed in met. centners) was 15,137; 1902, 10,365; 1901, 10,148; 1900, 5,526; 1899, 1,929; 1898, 1,713; and 1897, 1,469.

Referring to prison labor the British Consul mentions that in 1902 the Ministry of the Interior for the first time ordered that convicts in some of the prisons should manufacture envelopes for use in some of the Government departments. This innovation has apparently worked so satisfactorily that the system is to be extended until all envelopes used in Government offices are thus supplied. The rumors of the extension of the system called forth a petition addressed to the Prussian Diet by those who thought their commercial interests were thus being threatened. The discussion of this petition in committee brought forth some interesting information concerning Prussian prison labor generally.

To avoid as far as possible the often not unfounded complaint concerning the competition of prison produced articles with similar articles produced elsewhere, the authorities are now being guided by the following principles: (1) The system of letting out prison labor by contract is to be abandoned, because it injures free labor generally and some crafts in particular, as the system has especially made been use of by commercial enterprises with considerable capitals. (2) Prison labor is chiefly to be used for the manufacture of articles for prison use and for the use of Government departments. (3) Prisoners are also to be used as far as possible and as far as admissible for labor upon the soil and other public works. In consequence of the application of these principles, to-day only 27 per cent. of prisoners are occupied in the execution of contract work, and at no distant time this occupation will have been abandoned altogether. But even to-day no serious competition can be said to arise from contracts still in operation.

Attention is directed to the practice of marking goods manufactured in Germany with British names and phrases so as to misguide the buying public, among the articles thus sold being all kinds of papers and card boards, etc. The Consul regards it as curious that the practice should not have been abandoned, as in many instances the improvement of German manufactures is notorious, and the words "made in Germany" have become a recommendation for the articles that bear such an inscription.

* * *

The Pulp and Forestry Problem in New Brunswick

The St. John Sun publishes an interview with the editor of The Pulp and Paper Magazine, who referred to the wonderful development of the Canadian West and strongly advised the young men of the Maritime Provinces who must leave home, to seek their fortunes there instead of going to other countries. But he believed that this migration would in a few years be unnecessary if the public men and capitalists of the province were aware of the industrial future that would be opened up for New Brunswick if pulp and paper manufacturing was taken up, based on a policy of afforestation.

In the course of the interview he gave facts showing a great awakening on the forestry question in the Canadian West, as well as in the United States. In the latter country the people have begun to realize that whole states are rapidly becoming barren as a direct result of the reckless methods of destroying forests, and the enormous consumption of coniferous trees for pulp and paper manufacturing has within the past fifteen years hastened this destruction at an alarming rate. Having stripped the forests that are accessible the United States pulp and paper manufacturers have begun to draw upon the forests of Canada to such an extent that at the present moment one-third of the pulp-wood and pulp supplies of the mills across the line are derived from Canada, the Province of Quebec furnishing the bulk of these supplies. Statistics do not show this, because a great deal of this wood goes out of the country under other classifications than pulp-wood, while the methods of measuring minimize the actual quantities. Mr. Biggar estimates that between 800,000 and 1,000,000 cords of Canadian wood are used in the pulp mills of the United States, although official returns show only about 350,000 cords. This is in addition to over 160,000 tons of Canadian pulp that furnishes American paper mills.

"Is this export trade not a good thing since we get a good price for a class of wood which heretofore has been little valued?" asked the reporter.

"It would be if it were only a question of timber," was the reply, "but, the present methods of carrying on the trade are endangering the permanence of our water powers, are affecting the distribution of rainfall, are reducing fertile tracts to sterility for agricultural purposes and exhausting our most accessible pulp-woods with one stroke. It has been shown not only in many parts of the States, but in Ontario and Quebec, that streams and small rivers which formerly ran the year round, have in the last 50 to 100 years become either totally dry or else are subject to high freshets in the spring and become trickling streams in the summer because of clearing away the forests from the hills which are the sources of these streams. Not only this but the spring torrents wash the surface soil away, leaving a land unsuitable for farming and unfavorable for young growing trees. This I learn has actually taken place in New Brunswick, in the region of McAdam Junction eastward.

"For a successful pulp industry you require large and perennial water flows as well as plentiful supplies of wood, so you see that on the correct treatment of your woodlands depend not only the pulp and paper industry, but the agricultural resources of the province as well, for a country subject to alternate deluges and summer droughts will never make headway, where dairying, cattle raising and grain raising are the staples.

"As an example of the retribution that follows the wanton waste of forests look at Andalusia, in Spain. Andalusia—a very synonym of fertility and abundance as any reader of history knows—and in that rich province the despatches told us the other day that 1,000,000 peasants are hungry, and of these 100,000 are actually starving and are driven to looting the towns. And all because of the destruction of forests combined with ignorant methods of farming. Mesopotamia is another historic example—once the granary and garden of the ancient world, now almost too sterile to support the vulture and the hyena.

"An ounce of prevention is worth a pound of cure. Better save your water powers and forests now than go through the painful process of restoring them after desolation. It is true you have enormous timber tracts, but is it not better to convert them into finished paper than ship them from the country as pulp-wood. I find that if the present quantity of pulp and pulp-wood now exported were manufactured into pulp and paper it would mean an investment in plant and buildings of over $21,000,000 and an annual wage bill of $3,000,000 paid among our own people. We get from $4 to $8 a cord in varying states of the market for the wood, whereas if that raw material was made into paper we would get from $40 to $100 a ton, according to class of paper. As 1⅛ cord is required to a ton of pulp it will be seen how great is the difference between being hewers of wood and makers of paper. In view of the development of the newspaper press throughout the world, and the constantly increasing uses of pulp, I consider that pulp and paper afford the greatest prospect of any field of industry in Canada. We have, as you know, within our boundaries 40 per cent. of the water power of the world, and we have also a greater area of spruce timber than any country in the world. While this is so, only a portion of this spruce country is at present accessible to the markets of the world, and hence the need of conserving carefully the areas that are convenient to shipping points."

The reporter suggested a question as to the commercial success of those mills which have already been established in the Maritime Provinces.

"Every one of these failures, it was explained, is due to the fact that they have been planned or managed by outsiders who did not know the country or would not adapt themselves to the local conditions. Two mills were built without securing timber limits to feed them, and they were 'held up' by those who had the raw material. In another case a mill was located where the cost of transportation in and out rendered success almost impossible with existing prices. Other causes operated in other cases. The projector of a pulp or paper mill should see that he can get his wood to the mill by water, if it is not immediately at hand, and get his product shipped by water or both water and rail. In planning a mill get a mill engineer who knows the country and the essentials of the trade—and there are three or four such experts now in Canada—and the enterprise is bound to succeed. In New Brunswick you have not only numbers of flotable streams for getting the wood down but you have access to the sea and rail at many points where water power is abundant. You have, further, ample supplies of limestone where the chemical fibre process is to be carried on.

"Within the past month the Belgo-Canadian Pulp and Paper Co., of Shawinigan Falls, Que., has shipped two cargoes, aggregating over 5,000 tons of pulp, to Nantes as the beginning of a direct trade with France. An English broker has just visited Canada, and the result will be a large increase this year in the growing export of pulp in Great Britain.

"But more important still, Herr A. Scheck, one of the state foresters of Prussia, has been sent out by Count von Buelow to investigate the pulp possibilities of Canada. I had the pleasure of a chat with Herr Scheck, who says that Canada evidently can supply pulp for the world. He adds that as the forests of Europe show signs of failing to yield a constant supply of material, and as the paper trade of Germany is expanding, it is desirable to look for more reliable supplies of pulp. It is probable that German capital will be invested in this country as the result of Herr Scheck's report, and this will be an opportunity for Canadian pulp and timber limit men to associate themselves with this new direct German trade."

These are samples of how things are coming Canada's way in this line, and it is only necessary to adopt a wise forestry policy in order to place this country at the head of the wood pulp industry of the world before many years.

The Lake Superior Corporation

The Lake Superior Corporation, whose industries are centred at Sault Ste. Marie, Ont., held its annual meeting on the 4th inst. at the head office, Jersey City, N.J., when reports for the past year were presented, including the report on the Sault Ste. Marie Pulp and Paper Co.

C. D. Warren, of Toronto, the president of the corporation, in his review of the past year, stated that the last Canadian property to remain in the receiver's hands, the Lake Superior Power, has been released, and has passed into the control of the corporation. The aggregate net income of the plants operated is in excess of the fixed charges of the corporation. The old indebtedness has been practically all settled, with the exception of a few disputed claims and a number of small accounts. When these are all settled, the balance of the treasury bonds for the users of the corporation will probably be a little over one million dollars. Plans have been considered for additions to the plant, which will materially increase the earning capacity, but lack of ready money for this purpose has prevented action being taken beyond a very limited extent, and on lines of extreme urgency. It is expected that this hindrance will be removed during the current fiscal year by the disposition of treasury bonds, and by the sale of nickel matte and ore on hand, and from the increasing net earnings of the current year. The maximum monthly output of the rail mill was 12,138 tons. The two blast furnaces produced 11,997 tons of pig iron during the month of August, 1905. Over 200,000 tons of ore were taken out at the Helen mine, and this, together with the stock on hand and the output to the close of the shipping season this year, has been sold. The woods operations for the year have not resulted satisfactorily owing to the large dues payable to the Government, and to other matters incident to this work. A new arrangement has recently been consummated with the Government which will make more profitable operations possible, and it is believed that the woods department will hereafter show fair earnings. The saw-mill has been kept running profitably with our own logs and custom work. The pulp mill produced 27,817 tons of ground wood pulp during the year, which is the largest output in its history. Building paper and tar paper are also being made in increasing quantity, and will augment the income of this department. The Algoma Central and Hudson Bay Railway and the Manitoulin and North Shore Railway and the fleet of steamers have been operated profitably, mostly in carrying the companies' freight. The two traction companies at the Canadian and Michigan "Soos" show a loss for the year. The traffic is increasing, however, and, it is expected, will show better results the coming year. The Tagona Water and Light Company, with a business of comparatively small volume, is one of the best properties, in proportion to the investment.

The great power house of the Michigan Lake Superior Co. will not bear the strain to develop a full head of power, and the work of strengthening it cannot now be undertaken.

The subsidiary companies owned by the Lake Superior Corporation are: Algoma Central and Hudson Bay Railway Company, Manitoulin and North Shore Railway Company; Algoma Commercial Company, Limited; Algoma Iron Works, British America Express Company, Algoma Steel Company, Limited; Lake Superior Power Company, International Transit Company, Trans-St. Mary's Traction Company, Tagona Water and Light Company, Sault Ste. Marie Pulp and Paper Company.

The officers for the ensuing year are: Charles D. Warren, president; Charles E.Orvis, first vice-president; Thomas J. Drummond, second vice-president; John T. Terry, Jr., treasurer and secretary; Edward White, assistant treasurer and assistant secretary; directors, Alfred P. Boller, Dumont Clarke, Francis H. Clergue, Thomas J. Drummond, Charles S. Hinchman, Edmund O. Trowbridge, J. Tatnall Lea, Charles E. Orvis, William H. Plummer, Francis B. Reeves, John T. Terry, Charles D. Warren.

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The Forestry Convention

Arrangements for the Forestry Convention at Ottawa on the 10th, 11th and 12th January next are in a forward state, and the meeting will be the most important ever held to discuss questions relating to the future of our forests. In view of the intimate relations of our forests to all the other material resources of Canada the following letter addressed to the people of Canada by Sir Wilfrid Laurier shows that the vital importance of the forestry policy of the country is now better realized in high quarters:—

"Canada possesses one of the largest areas of virgin forest of any country in the world and is ranked by European experts first, or among the first, of the important sources of the world's timber supply for the future.

"The preservation of the streams in perennial and constant flow, which is largely controlled by the forests on the water-sheds, will have an important influence on the industrial and agricultural development of the Dominion. The expansion of our electrical and mechanical industries will be regulated to a great extent by water, which forms the greatest source of power in all countries, and some of our western districts are dependent on irrigation to ensure the success of agricultural operations.

"In all the older provinces the clearing of the soil has been carried to such an extent that the ill effects on the water supply and on agriculture are clearly marked, while on the western prairies the need of sheltering trees for houses and fields is seriously felt by the settlers.

"The early construction of the Transcontinental Railway, and of other railways, through our northern forested districts and the consequent opening of those districts to general traffic, will increase the danger from fire which has already been a most active agent of destruction.

"These conditions are not new, they have from time to time received public attention, and during the Session just closed Parliament authorized the summoning of a convention for the more thorough discussion of the same.

"I, therefore, hereby call a public convention to meet in the city of Ottawa on the 10th, 11th and 12th of January, 1906, under the auspices of the Canadian Forestry Association and to this convention are specially invited:

"Members of the Senate and House of Commons; Lieutenant-Governors of the Provinces; members of Legislative Councils and Legislative Assemblies of the Provinces; Dominion and Provincial forest officials; representatives of Boards of Trade; representatives of universities and agricultural colleges; representatives of farmers' institutes; representatives of Canadian Mining Institute; representatives of the Canadian Society of Civil Engineers; representatives of fish and game associations, and all others who take an interest in Forestry.

"An invitation is also extended to the Bureau of Forestry of the United States, the American Forestry Association and the State Forestry Bureaus and Associations to send representatives to this convention.

WILFRID LAURIER."

* * *

Britain's Pulp Supplies

Canada has frequently been pointed to as likely to prove a formidable competitor to Sweden and Norway in the supply of wood pulp to the British market. It will not be denied that Canada possesses the necessary natural resources for building up a large export trade, but developments so far have been in the direction of supplying American requirements rather than the British market. As a matter of fact, as shown by the official figures dealing with the imports of wood pulp into the United Kingdom during the past five years, Canada's shipments have fallen off considerably. A drop is also shown in the value of the receipts from Norway, but this is more than covered by the increase in Swedish supplies. In 1900 the total value of the imports into the United Kingdom was £2,617,789, and in 1904 £2,521,048, the participation of the three following countries being:—

	1900.	1904.
Sweden ..	31.5 per cent.	44.8 per cent.
Norway ..	50.7 "	40.3 "
Canada ..	9.4 "	5.7 "

Taking last year's trade, over 85 per cent. was controlled by Sweden and Norway, whilst the share that fell to Canada was under six per cent. It is noteworthy that in 1900 the United States supplies the British market with £55,393 worth of wood pulp, and in the following year the value stood at £91,491, whereas the shipments last year amounted to £10,992. Amongst other countries competing in the British market are Russia, Germany, Holland, Belgium and Portugal.—World's Paper Trade Review.

Mill Matters

The Riordon sulphite plant at St. Catharines will for the present run during the day only.

The annual meeting of the International Paper Co., which now has large interests in Canada will be held in New York on the 25th inst.

The Quebec Transport Company's steamer Queensborough took to England last month a cargo of 3,500 tons of pulp from the Belgo Pulp and Paper Company, of Shawinigan Falls.

There is a rumor that John R. Booth, of Ottawa, will amalgamate all his Chaudiere industries, lumber, pulp and paper mills, into a stock company with A. W. Fleck, as secretary-treasurer.

Sturgeon Falls has passed the by-law voted on last month exempting from taxation the land and plant of the Northern Sulphite Mills, the sulphite pulp department of the Imperial Paper Mills.

Stauntons, Limited, wall paper manufacturers, are preparing to erect a fireproof extension to their large works in North Toronto. New wall paper printing and other machinery will be installed in the projected extension.

G. Eustace Burke, Canadian commercial agent, writing from Kingston, Jamaica, says there is an opening in the island for Canadian paper suitable for wrapping oranges, and there is a market also for Canadian printing paper.

The delivery of some of the machinery for the Canada Coating Mills Company's new coated paper mill at Georgetown, Ont., has been delayed and the installation is not yet complete. It is expected, however, that the mill will be in running order within a few weeks. Wm. Schumacher is manager.

We are informed that the report that the Royal Paper mills at East Angus, Que., have been purchased by the International Paper Company is not correct, but there is a reasonable expectation of the mill being started up shortly. As already mentioned the pulp department and the sawmill have been running right along.

J. R. Booth, Ottawa, has purchased from the Robb Engineering Company, Amherst, N.S., two 400 horse-power Robb-Armstrong Corliss engines, one 350 horse-power Robb-Armstrong Corliss engine and three 100 horse-power Robb-Armstrong Corliss engines. These engines are for Mr. Booth's new paper mills.

The Sissiboo Pulp and Paper Co., of Weymouth Bridge, N.S., recently sold its property to the Campbell Lumber Co. The Sissiboo Company's limits, added to those of the Campbell Lumber Co., give the latter 40,000 acres of spruce lands, with control of the Sissiboo lakes and eleven dams. They have made this year several thousand tons of pulp beside 8,000,000 feet of lumber.

R. S. McDonald, manager of the Backus-Brooks syndicate of Fort Frances, Ont., reports that all of the power now being developed at that place had been spoken for. The total power to be developed is 30,000 horse-power. The new industries to be located in Fort Frances will include a 600 ton pulp mill, large flour mill, sash and door factory, woodenware factory, saw-mill, elevators, and other works. The promoters believe that Fort Frances will be another Minneapolis.

The British Columbia loggers have made another protest against any further timber reserves being granted to the Western Canada Pulp and Paper Company. There appears to be the same antagonism between the pulp manufacturers and lumbermen in the West as between the farmers and ranchmen of the North-West. The lumbermen object to the pulp men obtaining rights to timber lands for pulp purposes and then securing other merchantable timber not required in their business.

In reference to the shipments of Canadian pulp to France, recently noted, A. Wertheim & Company, Hamburg, Germany, write: Please note that the two steamers mentioned, viz., the

"Heros" and "Newa" lately arrived brought about 5,000 tons of pulp, same having been chartered by our firm. Likewise have the other steamers which previously arrived in France with cargoes of Canadian pulp, viz., the steamers "Pomeranian," "Sarmatian," "Gulf of Ancud," "Florence," "Evangeline," been loaded by our firm.

L. J. Tweedie, Premier of New Brunswick, confirms the statement that the deal has been closed by which the International Paper Company, of New York, has obtained possession of the limits and mills of the Wm. Richards Lumber Company, of New Brunswick. The property is valued at $600,000. As reported in last issue the property includes 166,000 acres on the Taxis river and mills at Boiestown and Chatham. It is reported to be the intention of the new owners to erect a large pulp mill at Chatham. This would make the third pulp mill there.

The annual meeting of the Laurentide Paper Company was held in Montreal on the 17th inst. In the absence of Sir William Van Horne, the chair was occupied by Charles F. Smith. The financial and other statements were considered very satisfactory. The dividends for the past five years have averaged 8 per cent. Within the past year a new issue of stock to the amount of $1,200,000 was made, the new capital being devoted to increasing and modernizing the plant. The election of directors resulted as follows: President, Sir William Van Horne; directors, General Russell A. Alger, Detroit; Messrs. R. B. Angus, James Ross, C. F. Smith, C. R. Hosmer, and Ed. Hanson.

The annual meeting of the shareholders of the Trois Pistoles Pulp and Lumber Company was held this month, when the following were elected officers and directors: President, E. W. Tobin, M. P., Bromptonville; vice-president, Fred. S. Morse, Springfield, Mass.; secretary, J. A. Begin, M.P., Windsor Mills; treasurer, R. T. Wells, president First National Bank, Canton, N.Y.; directors: E. W. Tobin, M.P., S. S. Clark, Harrisville, N.Y.; John Bird, Canton, N.Y.; Chas. A. Gauvreau, M.P.; Temiscouata; A. Augers, Trois Pistoles; J. P. Tobin, Bromptonville, and Fred. S. Morse. The company operates two mills on the Trois Pistoles river, and has 84,000 acres of timber land.

J. G. Scott, general manager of the Quebec and Lake St. John Railway, is now on a trip to Manitoba, the new provinces and British Columbia. In an interview with the "Free Press" at Winnipeg Mr. Scott said regarding the pulp industry of the Lake St. John district: "The pulp industry gives the population a great deal of employment. This business is of great magnitude. One mill turns out 160 tons of dry pulp, or 320 tons of wet pulp daily, and keeps a line of steamers regularly in commission to Great Britain. The amount of its output in one year totals closely upon $1,000,000. Taken all around, Mr. Scott said that he considered the St. John valley the most progressive portion of Canada outside of Manitoba and the Western provinces."

The last issue of the "Labor Gazette" of Ottawa, gives the following reports on the industries of Merritton and Thorold for August: Labor was fairly well employed in the leading establishments. The Lincoln Paper Company's mills employ seventy-five hands, and reported business fair. The employees have a Saturday half-holiday from May to October. The Riordon Paper Company employs 150 hands, and business was reported good. Fourteen business houses in Merritton observed the half holiday during July and August; this affected twenty-nine clerks. The labor market of Thorold was active during August. A visit to the following works showed the number employed to be: Davies pulp mill, thirteen hands; Montrose paper mills, thirty; Thorold pulp mills, fourteen.

The Dominion Government has intervened in the water-power dispute between the E. B. Eddy Company and J.

R. Booth paper and pulp manufacturers, and has ordered both parties to desist from their work pending Government's decision. Under instructions from the Minister of Public Works, Hon. Chas. Hyman, E. D. Lafleur, chief engineer of the Public Works Department, wrote on the 13th, notifying the E. B. Eddy Company and the Hull Power & Manufacturing Company of the Quebec side to desist from work on the construction in dispute. The lessees from the Government on the Ontario side are also told that they must cease the work in progress, consisting of excavating the river bed, and they are ordered not to erect any structures up-stream from the bulkheads. It is reported that the parties in dispute have not respected the engineer's order, but the Premier is trying to promote an amicable settlement. Well-known engineers have assured the Government there is abundance of water for all, and it is only necessary to regulate the supply. The plan proposed is to build storage dams in the Upper Ottawa and release the water as needed in periods of low levels.

Another water power war is on between pulp and timber limit companies. This contest is between the new company formed to exploit the power at Grand Falls, N.B., and a company formed ten years ago to develop the same power. The charter of the older company was some years ago acquired by Senator Procter, of Vermont; Sir William Van Horne, Col. R. A. McLean, of St. John, and others. These gentlemen secured possession of certain properties at the falls, but did not commence work within the time required by their charter. In June, 1904, B. E. Kingman, of New York, and others entered into an agreement with the New Brunswick Government to take up the work of development at these falls and formed the company referred to in recent issues of this magazine. As an evidence of good faith they paid a deposit of $50,000 to the Government and they obtained their provincial charter in March last. Shortly after this a Dominion charter was issued to Senator Procter and his associates and now it is a question which charter will be valid. Premier Tweedie is reported to have said to the Secretary of State at Ottawa that his Government would insist on its right to charter companies of this kind for developing local enterprises. The falls in question yield the largest power in New Brunswick, it being estimated that 60,000 horse-power can be developed.

Litigation has arisen in connection with the purchase of the 300 square miles of timber limits on the Ste. Anne river of Quebec by the Bayless Pulp and Paper Company, of Binghampton, N. Y. An injunction has been obtained against this company and Oscar W. Ordway, of Quebec, restraining them from selling to any one else than F. Onderdonk and C. F. Snyder, of Herkimer, N.Y., the 1,500 shares in the Ste. Anne Power Co., of Canada, which carry control of the timber lands in question. The plaintiffs claim that they secured an option on this stock on the 25th August, good for 30 days, and as soon as they learned of the contemplated transfer they applied for the injunction. The case will now go into the courts to determine who has the title to the stock. The case furnishes another of the many scraps of evidence showing the growing dependence of United States mills upon Canadian pulp-wood and pulp. The plant of the Bayless Pulp and Paper Company is at present at Austin, Pa., but the supply of timber in that vicinity is nearly exhausted. In view of this the company investigated several pieces of timber land, among which was the tract on the St. Anne river, in Qubeec. This limit, which covers over 300 square miles, is covered with a thick growth of spruce and would furnish material for paper for a long period. The tract, as noted last month, was originally part of a grant made to the Seminary of Quebec, by the French Crown, which grant was afterwards confirmed by the British Crown.

The St. John, N.B., Sun reports on the reconstruction of the pulp mill at

Mispec: The alterations and repairs to the interior of the Mispec pulp mill will soon be completed. It was thought that it would be possible to have the mill in operation by the first of October, but the machinery will probably not be set in motion until several weeks later. The company now have stored near the mill about a million feet of pulp-wood, all ready to manufacture. This wood has been brought in cribs and scows from Musquash. By the 15th of December this quantity will be increased, if the expectations of the company are fulfilled, to three million feet, which will keep the mill busy for four months. The company have in the course of erection a mill at Musquash, where the wood will be cut into ten-foot lengths ready for the grinders. This mill will be ready for operation in two weeks. Instead, therefore, of transporting the wood to Mispec from Musquash, and cutting it into the required length there, it will be sawn in the company's new mill at Musquash and conveyed to Mispec in barges. The tug Lillie is now on her way from Boston with three barges, which will be used in carrying the pulp-wood from Musquash to Mispec. The wood will be thrown overboard from the barges at Mispec, and taken into the mill, or to the storage point by an elaborate conveying system, which is now being installed.

A correspondent of the "Canada Lumberman" describes the limits and operations of the various lumber and pulp companies, incorporated in the island of Newfoundland, some of which have been absorbed by the two pulp syndicates referred to in recent numbers. The following account is given of the Exploits and New Lands companies: The Exploits River Pulp Company is practically owned by Wood, Barker & Company, of Boston, Mass. Their limits consist of about 700,000 acres, on which there is a very large quantity of pulp-wood, also a very large quantity of fine pine. Their shipping port is at Botwoodville. They also own Bishop's Falls water power, where there is an excellent site for a pulp and paper mill. The New Lands Lumber and Pulp Company, incorporated under the laws of Newfoundland, have $1,000,000 capital stock. The following gentlemen are directors: J. H. Williams, Albany, N.Y., president; Harry J. Crowe, Halifax, vice-president and general manager; Henry Patton, Albany, N.Y., treasurer; Donald Morrison, ex-judge, St. Johns, Nfld., secretary. The limits consist of 320,000 acres, located in the pine belt of the island. Careful cruisers have estimated this property to have at least fifteen cords of pulp-wood on an average acre. The company erected two years ago a large up-to-date mill at Norris Arm, where they can ship their product by water or rail. They have also built up a village at this place for their workmen and another small mill at Indian Arm.

PULP AND PAPER MARKETS.

Toronto, Oct. 21st, 1905

In Canadian mechanical pulp there is not much change to report since last month, but that little change is for the better. Prices are steady. The water in the rivers of Quebec is low in most localties and complaint of low water is still more pronounced in New Brunswick, where large quantities of logs are tied up in the region tributary to the St. John river. At the beginning of this month half the saw mills at St. John were closed and the season practically ended six weeks earlier than usual.

Canadian sulphite is in good demand and prices are $1 a ton higher than last month. This class of pulp can now be sent to England at better prices than are obtainable in the United States, though these manufacturers are themselves obliged to pay higher figures for Scandinavian sulphite.

A Canadian visitor to the States reports that trade in the west is good and there is a big consumption, but an over supply of news is being piled up, and

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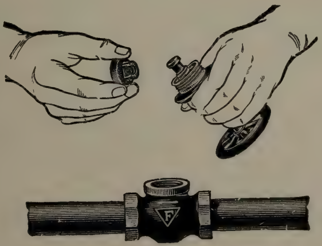
CHANGING A DISC
IN A
FAIRBANKS' VALVE



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FAIRBANKS' VALVES REDUCE YOUR COST OF PRODUCTION.

THE CANADIAN FAIRBANKS COMPANY, Ltd.

Montreal Toronto Vancouver Winnipeg

there is also some over-production of book papers.

Reports from New York indicate good trade, and there is a tendency to raise the prices of all grades. This appears to be necessitated by the rise of almost all lines of raw material.

New York prices for ground wood are quoted at $19 to $22 per ton delivered at mill, with prospects of maintenance of these rates. Domestic bleached sulphite is reported at .2½ to .2⅞, and unbleached at 1.80 to 2.15. Foreign bleached, delivered, 3.25 to 3.60, and foreign unbleached 2.25 to 2.65. Soda fibre, 2.15 to 2.30.

The PULP & PAPER TRADING CO.,
TEMPLE COURT BUILDING, NEW YORK CITY.
DEALERS IN
Paper and Pulp of All Kinds.
Prices and Samples on Application.

BARKER,
CHIPPER,
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MACHINE KNIVES
Of Every Description.
The Peter Hay Knife Co., Limited, Galt, Ont.

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Cheney-Bigelow Wire Works
SPRINGFIELD, MASS.
... Manufacturers of ...
FOURDRINIER WIRES
CYLINDER MOLDS, DANDY ROLLS
—ALSO—
Brass, Copper and Iron Wire Cloth
SOLE MANUFACTURERS OF THE
Bell Patent Flat Wires for Book Papers
F

RAG AND PAPER STOCK MARKET.

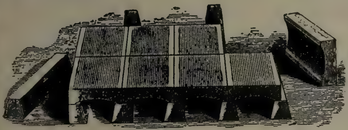
Montreal, Oct. 20th, 1905.

The paper stock market, while not marked by any great activity, is very firm. Domestic stock has been moving at steady figures during the summer months, and is now being affected by the

Wood Pulp Agent Wanted.

A first class European wood-pulp import firm wants to engage an Agent in Canada for its purchases in Canadian woodpulp for export to Europe. Thorough knowledge of wood-pulp business and acquaintance with wood-pulp manufacturers required. Address, "H. A. M.," care of this Magazine.

Drainer Stones



Save your stock and temper by using the Klary & Snell Patent Drainer Stones. They are the only drainers that give satisfaction.

Send for Sample and Price List.

SAMUEL SNELL CO., Holyoke, Mass.

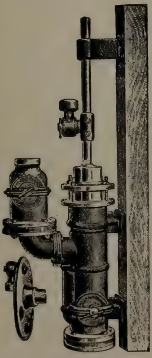
STUFF PUMP

This pump is made in three sizes, 5", 6" and 8".

The valves are made so as to be easily and cheaply replaced and can be got at without using wrench.

We also make boiler feed and other pumps.

Particulars and references on request.



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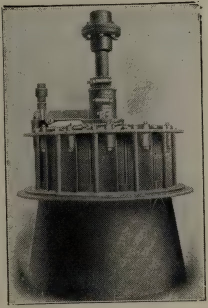
The Samson Turbine



We have supplied many of our Samson turbine water wheels to pulp mills for direct connection to grinders, for driving beaters, and, in fact, for all power purposes.

The Samson has an even and regular speed under all changes of load, ensuring better and more even quality of pulp and an even output from the paper machines.

Of course the work placed on a water wheel when used for this purpose is very trying, but the Samson has never yet failed, under even harder conditions.

It also costs less per horse power than any other turbine.

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THE PUSEY & JONES COMPANY

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Machinery for Paper Mills and Pulp Mills

REPRESENTED BY

THE WM. HAMILTON MFG. CO., LTD.,

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Who are prepared to Build in Canada the Inventions Patented in Canada by THOMAS H. SAVERY,

Under Numbers 68,093, 71,746, 72,118, 77,818, 89,114, 89,115;

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Pulping Machines & Kneaders

FOR PULPING-UP

Dry Wood Pulp, Machine "Broke," Old Paper Stock, Waste Papers.

MADE IN THREE SIZES TO PULP THREE, SIX AND NINE TONS DRY WOOD PULP IN TWENTY-FOUR HOURS. — FIVE, EIGHT AND TWELVE HORSE POWER REQUIRED.

£125, £150 and £200 c.i.f. U.K. Ports.

Beaters and Edge Runners can be filled in from one to two minutes if the pulp is first disintegrated by one of the Wurster Engines, while the output is larger with the same power. These Engines do four times the work of stones, and neither shorten, affect, crease, or wet the fibre in any way, nor change the color or the sizing. They can also be used for Kneading Clay and other Fillers, and Bleaching Powder.

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ENGLAND.

continued high prices asked by European packers.

Manilla rope, bagging and the better grades of waste paper show an advance and there is no likelihood of any line of paper stock being lower in the immediate future. How far they may advance depends upon the quantity of reserve stock laid in by manufacturers during the summer. Stocks held by packers are small, and there might be a general scarcity before spring.

No. 1 white shirt cuttings..	$5.25	to	$5.75
Light print cuttings......	4.00	to	4.50
Unbleached cuttings......	4.50	to	5.00
White shoe clips.........	4.50	to	5.00
Colored shoe clips........	2.75	to	3.25
Domestic white cottons...	2.25	to	2.50
Blues and thirds..........	1.40	to	1.50
Roofing stock	.60	to	.70
Waste papers	.35	to	.40
Manilla rope	2.25	to	2.50
Bagging	.65	to	.75

CHEMICAL MARKETS.

The "Paper Mill" reports the New York markets as follows:

Enquiry for alkali is increasing to a small extent, and sales of several lots for delivery this and next year of high test on the basis of 75c. for light and 80c. for dense, f.o.b. works, have been made. There is a fair local demand with jobbing sales at 85c. to 90c. Orders for bleaching powder are booked for

ATTERBURY BROTHERS, Incorporated.
Importers and Exporters.
Wood Pulp, FOREIGN AND DOMESTIC Rags AND Paper Stock
140 Nassau Street, New York City.
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EXPORTERS OF
WASTE PAPER FOR RE-MANUFACTURE.
W. V. BOWATER & SONS,
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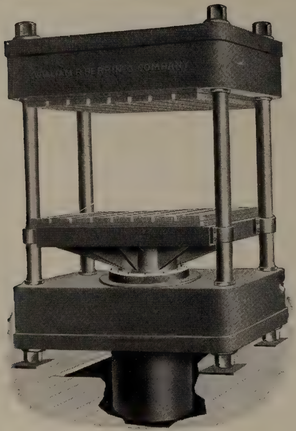
IMPORTERS OF
NEWS IN REAMS AND REELS.

October delivery at $1.25 and up for foreign or domestic. Prices for brimstone advanced and demand is fairly good, warranting the belief that additional advance will be made. Prices are: $22.15 for New York, Boston and Portland, and $22.60 for Baltimore and Philadelphia. Caustic soda is in demand and sales are made for 1906 delivery on the basis of $1.75 to $1.80 for high test, and 10c. higher for 60 per cent., f.o.b. works. Domestic China clay is very quiet at $7.50, and foreign is unchanged at $11, but some strong competition in the foreign clays continues.

PRESSES, HYDRAULIC or KNUCKLE JOINT



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For Sale

Paper Machines,
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Boilers,
Fourdriniers,
Press Rolls,
Dryers, Calenders,
Pumps, Heaters.

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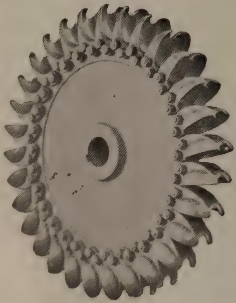
BOSTON, - - MASS.



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AND
WORTHINGTON TURBINE PUMPS.

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It is interesting to note that according to reports from England the Anglo-Sicilian Sulphur Co., after a contest lasting a couple of years, has been brought to its knees by the Union Sulphur Co., of New York, whose sulphur lakes in Louisiana were described in the June number of this magazine. By a new process this American company is able to pump sulphur straight from the beds and when it settles in the receiving tanks it is over 99.9 per cent. pure. This is done by the application of superheated water under pressure, and enables the Union Company to produce it so cheaply that it can undersell the Anglo-Sicilian Company, which heretofore had a virtual monopoly of the markets of the world. However, a truce has been declared and prices are likely to remain steady.

Reports from Liverpool and Manchester show that in the alkali branch there is a good tone. Consumers of bleaching powder continue to cover their

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PARIS .. .. Rue de Londres No. 29.
ANGOULEME (France) .. 43 Rue Louis Desbrandes.
LYONS .. .. 54, Cours Gambetta.
MILAN .. .. 24 Via Solferino
TOLOSA (Spain) .. .. .. 18 Calle San Francisco.
NEW YORK .. .. 99 Nassau Street.
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wants for next year and prices are firm, but slight concessions are granted in some cases. Caustic soda values are steady for prompt and forward delivery, and contracts are being placed for next year. There is a good demand for China clay and other fillings are in request.

* * *

The Quebec Paper Bag Co. has assigned with liabilities of $22,000 and assets of $19,644. The principal creditors are J. Ford & Co., Portneuf, mortgage on factory and machinery, $11,060, besides an unpreferred claim of $5,411; the E. B. Eddy & Co., Ltd., Hull, $496; Henry Chemical Co., St. Basile, $425; Genin & Trudeau & Cie., Montreal, $345.

* * *

—The Canadian Fairbanks Company has completed its contract with the Canada Car Company, for Shafting, Universal Giant Hangers, Oneida Steel Split Pulleys, Couplings, Raw Hide Pinions, and other transmission material.

SPECIAL:

Cyclone Separators for Barkers.
Extra Heavy Steel Plate
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Heating and Ventilating by
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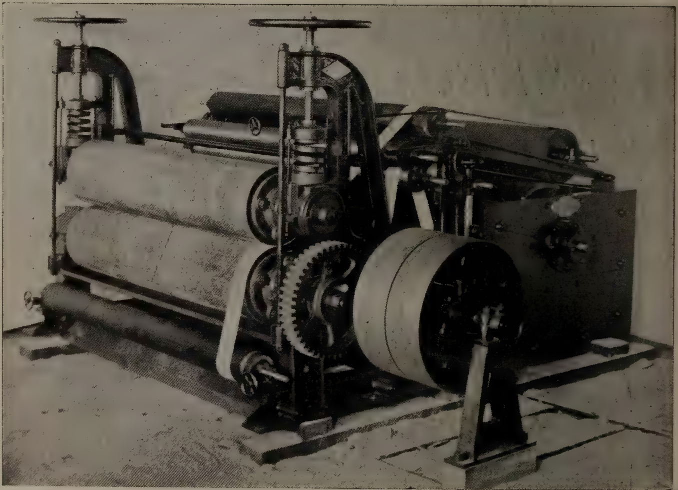

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MAKERS OF

Pulp Machinery,
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Mills Built and Equipped with Power Plant.

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Paper Mill Machinery.

Guaranteed the most serviceable and efficient of any built.

Modern Designs, New Patented Ideas, Used Exclusively by us.

Cylinder and Fourdrinier Machines.
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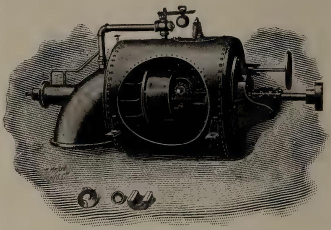
THE

Crocker Improved Turbine

In Horizontal Setting, with Quarter Turn Elbow.



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Notice how complete and compact this arrangement is, and how easily it may be installed. Can you use anything of this kind? Your inquiries will receive prompt attention.

Water Powers examined and Reports made.
Estimates submitted for Complete Equipments.

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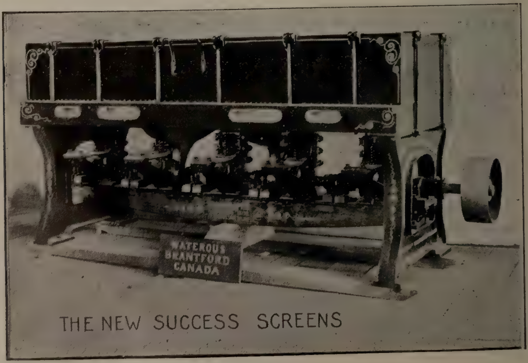
The Waterous Engine Works Co., Limited

BRANTFORD. - CANADA.



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Laurentide Paper Company,	14,000 h.p.
Montreal Cotton Company,	7,000 h.p.
Sturgeon Falls Pulp Co.	9,000 h.p.
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Every Grade of Waste for Paper Making.

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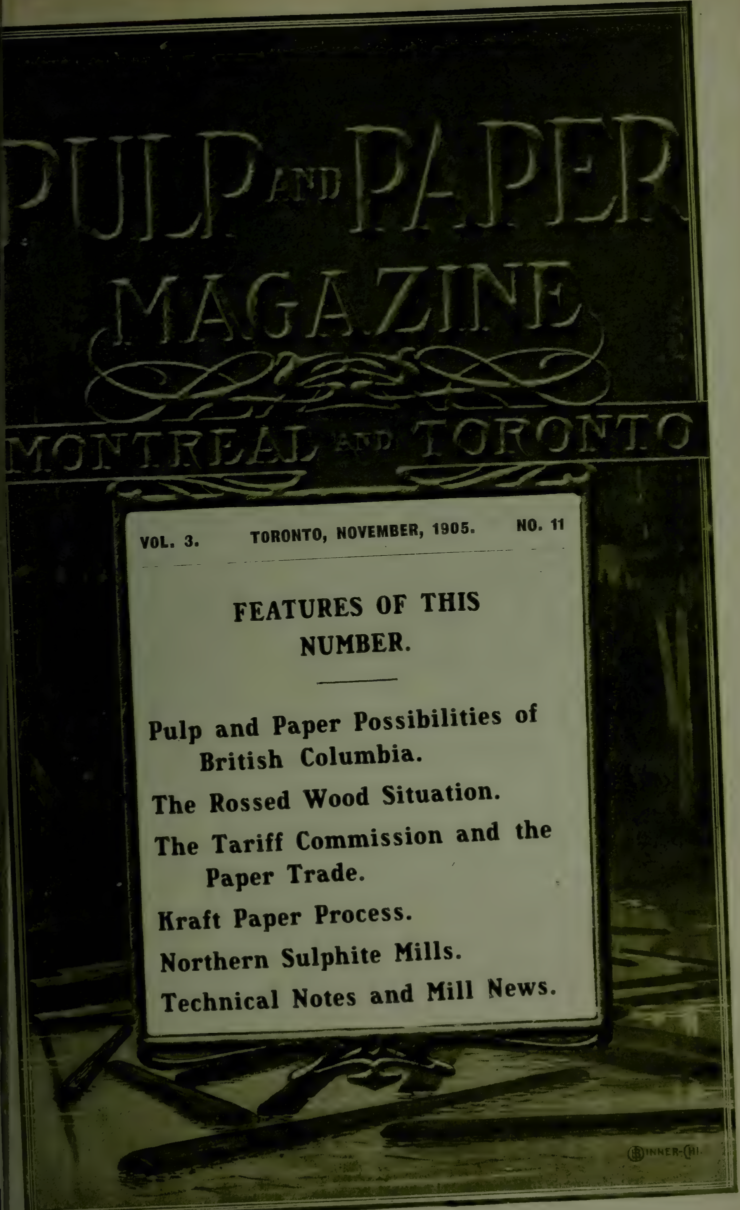

PULP AND PAPER MAGAZINE

MONTREAL AND TORONTO

VOL. 3. TORONTO, NOVEMBER, 1905. NO. 11

FEATURES OF THIS NUMBER.

- Pulp and Paper Possibilities of British Columbia.
- The Rossed Wood Situation.
- The Tariff Commission and the Paper Trade.
- Kraft Paper Process.
- Northern Sulphite Mills.
- Technical Notes and Mill News.

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INDEX TO ADVERTISEMENTS.

Atterbury Bros. 41
Beloit Iron Works 47
Benson & Co., W. T 10
Bentley & Jackson 4
Bertram's, Limited 6
Black-Clawson Co., The 7
Bredt & Co., F. 10
Brunner, Mond & Co., Limited 50
Canada Paper Co. 49
Canadian Fairbanks Co , Limited, The 37
Canadian Rubber Co. of Montreal 8
Carrier, Laine & Co. 46
Castle, Gottheil & Overton 9
Cheney-Bigelow Wire Works 38
Christie, J. 50
Christie, Limited, George 3
Cousland & Co., A. 10
Davis & Co., F. H. 42
DeCew, J. A. 9
Eastwood Wire Mfg. Co 2
Emerson Mfg. Co 37
Freese, Jean 3
Hamilton Mfg. Co., Wm 39
Hardy, George F. 9
Hawksworth & Sons Co., Limited, Alfred. 12
Hay Knife Co., Limited, Peter 38
Hough, R. 50
Huyck & Sons, F. C 5
International Pulp Co. 9
Jenckes Machine Co., Limited 12 & 48
Johnson & Sons, Limited, C. H 6
Kenyon & Son, James 43
Klipstein & Co., A. 11
Kimball, Herbert S. 9
Knight & Co., John 45
Lea & Coffiin, and H. S. Ferguson 9
Little, Arthur D. 9
McDougall Caledonian Iron Works, The John 42
McOuat & Son, T. 39
Paton, Thomas L 3
Perrin & Co., Ltd., Wm. R. 42
Porritt & Sons, Joseph 10
Porritt & Sons, Limited, Samuel 50
Porritt Bror. & Austin 6
Pringle & Son, T. 9
Pulp & Paper Trading Co., The 38
Pusey & Jones Co 40
Quebec & Lake St. John Ry. 8
Smith Co., S. Morgan 49
Sullivan & Co., C. F 10
Union Screen Plate Co 3
Union Sulphur Co., The 43
Vogel, C. H 9
Wallace-Jaastad-Drewson 50
Waterous Engine Works Co., Ltd 48
Wertheim & Co., A. 44
Whittaker, Richard 11
Wilson, Paterson & Co. 12
Winn & Holland 50
Wurster, Dr. C. 40
Young, J. S 49

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At the annual meeting of the International Paper Co. last month at Corinth, N. Y., the statements showed a surplus of $43,715 on the operations of the past year, the total surplus being now $6,020,146. Among the assets of the company $4,191,158 is in woodlands, a large portion of which are in Canada. The increase in this asset over the previous year was $26,000.

There have been conferences during the past month between the Hon. Chas. Hyman, minister of public works, and the Eddy, Booth, Bronson and Ottawa Electric interests regarding the regulation of water at the Chaudiere Falls. Though no agreement has yet been announced, the differences of the companies may be settled by the pooling of shares in the water power and its distribution on both sides of the river by means of a central dam to regulate the flow equally, or at least equitably, to both sides of the river.. The suggestion is made that the government build a series of dams on the Upper Ottawa to insure a uniform flow throughout the year. If no agreement is reached on these lines it is likely that the dispute will await a decision of the Supreme Court or perhaps the Imperial Privy Council on the broader question whether the Dominion or the Provincial Governments have jurisdiction in the case.

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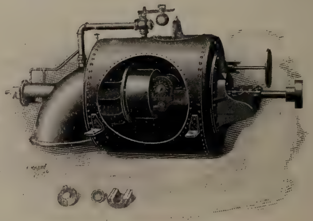

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THE
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OF CANADA

VOL. 3.—NO. 11. TORONTO, NOVEMBER, 1905. $1 A YEAR. SINGLE COPY 10C.

Pulp and Paper Magazine

A monthly magazine devoted to the interests of Canadian pulp and paper manufacturers and the paper trade issued between the 15th and 20th of each month.

SUBSCRIPTIONS: Canada, Great Britain and the United States, $1 a year; to Foreign Countries, 5s. a year.

Changes of advertisements should be in the publishers hands not later than the 10th of the month, and, where proofs are required, four days earlier. Cuts should be sent by mail, not by express.

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PUBLISHERS
62 CHURCH ST., TORONTO.

PRINTED AT THE OFFICE OF THE MONETARY TIMES PRINTING CO., LIMITED, TORONTO, CANADA.

TO SUBSCRIBERS AND ADVERTISERS.

The "Pulp and Paper Magazine," which was recently acquired by the "Monetary Times" Printing Co. from Biggar-Samuel, Limited, has been purchased by E. B. Biggar, who will be sole proprietor on and after December 1st. This Magazine and "The Canadian Journal of Fabrics" will continue to be printed at the office of the "Monetary Times" Printing Co., but the publication office will be removed to the Confederation Life Building. All accounts for subscriptions and advertisements will be payable from December 1st to E. B. Biggar.

Rooms 79 and 80,
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THE UNITED STATES PULP-WOOD DUTIES.

It is difficult for the average Canadian to keep track of the regulations and counter regulations, the decisions pro and con on this point and that, in the United States dealing with the imports of pulp and pulp-wood from Canada. The misplacing of a word in the article in last issue on this subject tended to the confusion in the minds of some of our readers. It should be understood that the extra, or countervailing, duty charged on pulp from Quebec is levied as an offset to the rebate of 25c. a cord which the Quebec Government allows off the stumpage on wood taken from Quebec crown lands. But the duty of 20 per cent. which had been charged on rossed wood, whether from Quebec or any other province, was another matter, and had no bearing on the Quebec regulation. It was a duty levied for a short time on rossed pulp-wood on the ground that the rossing process made it a manufactured article. This duty is said to have been levied at the instigation of certain holders of large pulp wood limits in the States, who thought to increase the value of their own supplies by restricting Canadian wood, and thus also put their United States competitors at a disadvantage. Whatever undercurrents of personal influence or whatever shiftings of commercial policy the conflicting decisions and confusing customs regulations have resulted in, the decision of the Quebec Pulp-wood Association to require henceforth that all sales of wood for export shall be made at a price f.o.b. in Canada, leaving the United States purchaser to settle his own difficulties with his own government, is a wise one if the members firmly adhere to it.

This stand has been well justified by what has happened since the meeting of the association, for we learn that the Washington government has decided to appeal from the decision in the Pierce case, and thus open the rossed wood question again.

The Pierce case was decided on the 26th ult. by Judge Wheeler, of the circuit court of the district of Vermont. The substance of Judge Wheeler's judgment was that he upheld the decision of the Board of General Appraisers who had held that rossed wood should be classed as "logs and round unmanuactured timber, including pulp-woods, irewood," etc. He considered that the rossing of the pulp logs was only another process of peeling or trimming, and left the logs for all purposes an unmanufactured article.

Now the Washington authorities have determined to appeal from this decision. Meantime instructions have been issued o the custom officers at Burlington and Newport, Vt., and at Bangor, Me., and t seven cities in New York State to admit rossed wood free until this appeal, which will probably be heard at New York, is determined.

The drift of matters in the pulp and wood trade relations with the United States for many years past ought to show us that our own policy should not be adjusted according to the whims of government officials nor the intrigues of conflicting trade and manufacturing interests in the United States, but that it should be taken up henceforth as a national policy designed both to develop our own manufactures and conserve our own timber resources, so that we shall not allow any portion of our domain to become a desert waste as other nations have done by the destruction of their forests.

Pulp & Paper Currency

A special meeting of Canadian paper manufacturers has been called for Dec. 1st at Montreal. The tariff and trade conditions will be among the subjects of are not likely to be repealed.

*

In reply to a correspondent we may say that the regulations prohibiting the export of pulp-wood from the Crown lands of Ontario are still in force, and are not likely to be repealed.

*

Chas. M. Kittson, Canada Government agent at Cape Town, advises Canadian paper manufacturers that European paper for wrapping and printing purposes, is obtaining an increasing foothold in the South African market, principally through aggressive business tactics. There is no reason why Canadian manufacturers should not share the increased business, which not only European makers but United States firms are getting in South Africa and

Australia. In times of depression at home it is an immense advantage to have an export trade to fall back upon.

⁂

The Aktiebolaget Sundsvalls Träsliperi is the name of a new mill in the town of Sundsvall, in northern Sweden to make bleached hot ground-wood pulp by electrolysis. Ragnar Flodquist, who is the guiding spirit in this new enterprise, has already booked contracts for 1906 at about 46 to 47 kroners. The pulp is said to be of clean, strong fibre, and of good quality and color.

⁂

Referring to the expansion of sulphite pulp manufacturing in Scandinavia, where a dozen or more new mills are erected, or in course of erection, with an annual capacity of 100,000 tons, the correspondent of the "Paper Maker" predicts that it will mean a slump in prices in another year or two. He says: Unfortunately for the Scandinavians, it seems that just because the cellulose makers are having a good year or two—which, I must say, they are justly entitled to, seeing the awful years they have had in the past—capitalists are rushing in helping to build mills on the hurry-up-and-get-rich-quick sort of idea. Unless a check is put on this policy, the cellulose makers will all be in for a bad time again from 1908 and onwards. For with Sweden, Norway, and Finland there is likely to be fully 150,000 extra tons of sulphite and sulphate pulp to come on the market in 1907-8.

⁂

It is instructive to learn that the new German tariff has operated, in some cases, so as to drive manufactures away from Germany. It seems that when the new tariff was promulgated the neighboring nations which were adversely affected set about to alter their duties so as to neutralize the effect as much as possible. In other words the theory that was discussed a good deal in Canada not long ago was put into effect—"If we cannot have reciprocity of trade let us have reciprocity of tariffs." The consequence of dealing with this method of German tariff aggression is that a number of large industries that depended on other European markets have been compelled to move into those countries from which their chief trade has been drawn. For example a fancy paper factory when faced with an increase on the part of Switzerland of double the tariff on those goods has has found it necessary to locate in Swiss territory; a chromo and colored paper mill has negotiated for the transfer of its works to Austria since it is no longer able to export there. A factory making stamped paper goods and another making paste-board goods are compelled to move to the same country because their best customers are there. A polygraphic printing works will move to Switzerland, and other firms contemplate moving to the United States because the trade policy of that country tends in the same direction. If this policy of raising mutual tariff walls is developed among the leading manufacturing nations, what will be the outcome? One effect will, no doubt, be that firms with large capital who have specialties in which they excel will get over the difficulty by having branch works in the countries that afford their largest field of trade, while consumers in countries having small home markets will have to pay the extra price.

Pulp and Paper Possibilities of British Columbia.

The Bureau of Provincial Information of British Columbia has issued an instructive special bulletin on the "Timber and Pulp-wood Industries" of the province, from which the following extracts are taken:

One of the most promising hopes which the future holds out to British Columbia is the creation of a great paper and pulp-making industry. Possessing as she does her full share of the timber reserve of Canada, her geographical situation gives her a prominent position over her sister Provinces; for vast as are their forest areas, these are all more or less distant from tidewater, while her pulp-wood forests border the ocean or the numerous navigable streams, which furnish easy and cheap communication with deep-water harbors. With transportation charges at a minimum and an unlimited supply of raw material of the very finest quality, British Columbia should be in a position to supply the greater half of the world with wood pulp, or, better still, with a paper of every grade and quality and in every form in which paper is used in the industrial arts. While the pulp and paper mills of the Eastern Provinces may find markets in the Eastern States, and Europe, British Columbia should stand without a rival in the rapidly developing marts of Asia and Australasia. In his admirable little work, "Pulp-Wood in Canada," George Johnson, F.S.S., says:

"Egypt and Canada.—The first was the land of the early paper plant; the second is the country of the latest paper tree.

"Egypt was the land of the papyrus, from which the ancient dwellers on the banks of the Nile obtained the material on which they wrote those well nigh imperishable records, which, three thousand years after they were stored away, have been produced from their hiding places looking as fresh with their cuttle-fish ink as though indited but yesterday.

"In modern times we have reverted to the ways of our ancestors and have gone back to the arboreal growth for the supply of paper to meet the world's marvellous demands.

"The banks of the Nile were the early store-house of the paper supply. The beech groves of Germany and England succeeded Egypt. Then toward the close of the 19th century came the opening up of the Canadian spruce forests.

"The slopes of the St. Lawrence, the St. Maurice, the Ottawa, the St. John, the Ste. Marie, the Fraser and the Qu'Appelle rivers are substituted for the Nile and the rivers of Europe. The eyes of commerce turn to the New World with confidence that there need not be a paper famine while the spruce flourishes in Canada.

"The centuries of the pyramid-builders and the 20th century—the latest born—salute each other within the shades of Canadian forests.

"Through the experiments of a student, while working in the quiet of a German laboratory, untold millions have been added to the wealth of Canada.

"At what time in the world's history paper began to be used is a question surrounded with obscurity.

"The Chinese appear to have employed the wood of the cotton plant, reduced to a pulp in the manufacture of their paper. The first rude efforts in other parts of Asia to secure a material suitable for the purposes of man, as a record of his thoughts and transactions, can be traced beyond the Christian era back to the second century, B. C.

"When the Arabs captured Samarcand, 704, A.D., they found the people skilled in the manufacture of paper from cotton, and, learning the art, rapidly disseminated the knowledge throughout their empire.

"By the 14th century paper-making had become a recognized European industry.

"At first Italy became the centre of the paper-making industry. Then Germany began to build factories after 1320 A. D. France secured her knowledge of paper-making from Spain late in the 12th century, the early paper being made of cotton.

"By the 14th century paper was not uncommon in England.

"At first paper was made entirely by hand. Then, as in the history of most manufactures, machinery was invented for the more rapid preparation; then came the division into writing paper, printing paper and wrapping paper, cotton rags being still the chief source of material from which paper was made.

"The demand becoming greater than the supply, the wit of man became actively engaged in finding material from other plants possessed of the necessary fibre. The cotton plant, the papyrus and the palm, flax and some other members of the vegetable kingdom had been employed. But still the demands for paper were inexorable and constantly enlarging.

"Every zone was searched for suitable material. It was thought that in esparto grass the requisite material had been discovered, and for years esparto, treated after a somewhat similar fashion as rags, was extensively used.

"Straw, de gras from Northern Africa, the leaves of the dwarf palm, sugar cane refuse, the stalks of the hop plant, nettles, the American thistle, peat and other articles have been successively or simultaneously experimented with in the hope of securing an ideal paper.

"Bamboo cane has also been made the subject of experimentation.

"Naturally those who were in search of a good material for the manufacture of fibre, reverting to the early employment of the palm tree for the purpose, began to experiment on other wood fibres.

"In the year 1845, Keller took out a patent in Saxony for a process of manufacturing paper from ground wood. Before that date its pre-industrial history is known only to the chemist. After that date many improvements were made in the machinery and methods used in grinding, the main object being to produce a longer and finer fibre.

"Business men soon began to realize that the students were on the right track. The chemists, thus encouraged, made a series of experiments to ascertain the best commercial way of reducing wood to a fibre capable of being made into paper. As a result of their experiments two methods have been selected, (1) mechanical treatment, and (2) chemical treatment.

"Practically, by the mechanical treatment, which consists of grinding up the wood under water, a pulp has been obtained which answers for the inferior kind of paper.

"But something more was wanted. Mechanical pulp was used chiefly as an adjunct in the manufacture of news and wall papers and printings, but there are several distinct classes of paper made from mechanical pulp without any other ingredient. Wood-pulp boards are also made from mechanical pulp chiefly for the purpose of making paper boxes.

"Chemical pulp is used as an adjunct with esparto, rags or chemical pulp in the manufacture of news, printing, colors and some kinds of wrapping paper.

"By combining chemical pulp and mechanical pulp in the proportion of about 30 or 40 per cent. of the former a good paper results such as can be used with success for most of the purposes for which paper is needed.

"But complete success had not even yet been reached. The practical operations connected with the manufacture of pulp from wood by the caustic soda process—such as barking, sawing, chopping, crushing, boiling, or digesting, washing and bleaching and soda recovery—had not, even in combination with pulp partly made of wood by mechanical means and partly made of rags, etc., produced the ideal paper.

"The world was ransacked for the proper wood. All the earlier efforts at wood-pulp making had been confined to pine wood and to poplar wood. Experiments were also made with the wood of the willow, bass, cedar, hemlock, maple and birch. Experiments were further made with trees of various ages, and in this respect it was found that for chemical pulp trees on an average of twenty years old were the best, the younger growth producing fibre of inferior quality.

"The different kinds of wood suitable for the manufacture of pulp are white and black spruce, Canada balsam, poplar, aspen and pine; spruce and balsam being the most valuable on account of the special quality of their fibre, and also on account of their color. These comparatively soft woods are easily ground. Poplar and aspen have the same quality, but they are faulty on account of knots and black veins, which spoil the color of the paper. Pine which, in the earlier stages of the development of the pulp-wood, was used in far the greatest proportion, is now used only in the manufacture of chemical pulp. It gives a good pulp but the process required to bleach is somewhat expensive. Besides the wood is too highly priced to be used profitably in the manufacture of paper. With the low rates that have ruled for paper for some years, pulp manufacturers require wood of small value if it can be obtained without the sacrifice of length of fibre.

"When, therefore, the chemist hit upon spruce and balsam and found them suitable in every respect for the production of the ideal cheap paper, and commercial men realized that these woods were comparatively cheap, quick of growth and well located for the needs of commerce—the world knew at length, after all the centuries of seeking, the right paper, meeting all requirements, had been invented.

"It was soon learned that the material could be utilized for the manufacture of many other articles besides paper of various kinds, such as news, printing, writing, wrapping, millboard, etc. Among these are pails, dishes and other hollow ware, paper parchment, cotton wool for hospital dressings, cotton yarn and cloth, silk yarn and fabrics, cigar boxes, medals, cornices, panels and other architectural details, picture frames, car wheels, steam pipes, water pipes, telegraph poles, electric conduits, roofing material, coffins, boats, cigar-holders, carpets, mattresses, lead pencils, artificial straw, shoe heels, vases and ornaments, furniture, horse-shoes, spools and bobbins, tool handles, buttons, cycle bar handles, fruit cans, hats, pinions for machinery, pulleys, letters for signs, substitutes for building stones and for boards, piano cases, tiles, paving bricks, fibre chamois, etc. It has also been used for encasing broken arms and legs."

The Raw Material.

Along the coast-line of the Mainland of British Columbia, and Vancouver Island, practically inexhaustible areas of pulp-woods can be found. South of Knight's Inlet the most abundant wood is the Douglar fir, which is successfully used for the manufacture of chemical pulp. Its suitability for mechanical pulp is not so certain. North of Knight's Inlet is the spruce and hemlock belt, affording enormous supplies of excellent pulp-wood—the Sitka spruce especially being unexcelled by any other wood for pulp purposes. These woods cover large tracts immediately contiguous to the sea-coast, so that logs can be landed at the mills at very low cost.

An important point in favor of the industries on the sea-coast of British Columbia is the mildness of the winters, which admits of operations being carried on throughout the whole year. The forests of this province are much more densely wooded than those of Eastern Canada, 500 cords per acre being not uncommon, while from 100 to 150 cords may be taken as a fair average of good timber lands. With proper husbanding the forests are practically inexhaustible for pulp-wood purposes. This is essentially a timber country. Atmospheric conditions are specially favorable to tree growth, which is very rapid, and the extent of otherwise valueless country along the coast that can be devoted to forestry is enormous. Owing to its wealth of raw mineral, excellent water-powers and geographical position, British Columbia occupies a position of eminent advantage in competing for the pulp and paper trade of the Pacific. A practically unlimited market is afforded by Australia, Japan, China and the western coast of America—both North and South.

An important factor bearing upon the future of British Columbia as the centre of the pulp and paper trade of the Pacific is the rapid depletion of the forests of the United States, and it is confidently anticipated that the importation of Canadian pulp and pulp-wood to that country, already large, will continue to rapidly increase. In conclusion, there is no industry, not even mining itself, which gives greater promise of commercial value and general importance than that of the manufacture of wood pulp and paper in this Province.

A special feature of British Columbia timber areas is their density, the yield being greatly in excess of that obtainable from equal areas in Eastern Canada. The average cut in Ontario is about 10 cords per acre, while upon the lands secured by British Columbia pulp companies, the estimated cut is over 100 cords per acre. This density enables logging to be carried on to great advantage, and it is estimated that the cost of wood at the mills for many years will be at least one-third of the average cost to Eastern United States mills. Cheap coal of excellent quality can be obtained from Nanaimo or Union, and shipments can be made directly by water to the mills.

Pulp Companies.

For many years the possibilities of British Columbia as a field for the manufacture of pulp and paper have been discussed in interested circles, and all available information as to natural conditions favorable to the industry and possible markets for the finished products has been collected and published by the Bureau of Provincial Information. As a result the interest of prominent paper manufacturers has been enlisted, and with the hearsay knowledge of the extent of British Columbia's immense forests of pulp-wood, intersected by numerous streams from which unlimited power can be generated, several companies have been organized, with the primary object of verifying the reports. The results of these investigations are so satisfactory that the companies are now proceeding to active work, and the establishment of a new and important industry seems certain. The Provincial Government gave encouragement to this industrial movement by granting the companies the right to prospect for and locate pulp-wood areas and water powers, for which, after selection, leases were granted on special terms. The important preliminary work of surveying their limits, locating their water powers, devising means of transportation and locating their mill-sites, has kept the companies busy for many months, and it is only now (the spring of 1905) that some of them have advanced to the stage of beginning actual building operations.

The companies which have been granted concessions are: The Industrial Power Company, the Pacific Coast Power Company, the Cassiar Power and Industrial Company, The Oriental Power and Pulp Co., and the Quatsino Power and Pulp Company.

The Western Canada Pulp and Paper Company, which is a consolidation of some of the above-mentioned interests, has selected its lands and is prepared to begin active work. This company has also secured a site for its works near the mouth of Powell River, 80 miles north of the City of Vancouver, where there is an immense water power. A contract has been made by the company for the supply of 10,400 tons per annum of "news" paper to an English firm. The estimated output of the plant will include 18,000 tons of "news" paper and 7,500 tons of sulphite pulp per annum, besides 80,000 feet of lumber daily. The stock of the company is held in British Columbia and England, there being many prominent English paper-makers on the directorate, of which Mr. W. C. Ward, of London, is chairman.

Mr. J. M. Mackinnon, manager of the Oriental Power and Pulp Company, furnishes the Bureau of Information with the following report of progress:

The company has completed all its surveys and leases have been granted by the Provincial Government for 83,200 acres of selected spruce, hemlock and balsam (or white-fir) for pulp purposes. The company has also secured 640 acres at Swanson Bay, for a mill site and other purposes. A water power sufficient to develop 15,000 h.-p. has also been acquired. Wharves, storehouses, and all other necessary buildings have been constructed and are ready for the installation of machinery. The company proposes to build and equip a sulphite pulp mill, with a capacity of 40 tons daily of sulphite pulp, bleached and unbleached, and later on to instal a ground wood pulp mill and paper mill with a daily capacity of 100 tons of news print. The company's operations to date represent a cash outlay of $100,000.

Our Customers.

The markets that can, with special facility, be supplied from British Columbia, are: British Columbia, Japan, Australia, China, New Zealand, Hawaii, the Philippines, Western Coast of South America, Western Coast of Mexico and Asiatic Russia.

The home market is a rapidly-growing one, and with the steady growth of population a correspondingly rapid increase of the requirements in the way of paper may reasonably be anticipated. The long distance from the Eastern mills and the freight rate makes competition from the East impossible.

Japan probably furnishes the greatest possibilities for the future, the yearly imports of paper averaging over $2,000,000, and that of pulp to about $600,000. Both the demand for paper and pulp in Japan is increasing very rapidly, and the pulp mills of this province will be in the best possible position to supply it.

The Australian market is perhaps the most important at the present time. There are no suitable pulping woods on that continent, and no water-powers, so that Australia is almost wholly dependent upon outside sources for its supply of paper.

If preferential trade duties were arranged between Canada and Australia, as may be possible in the future, Canada, (and British Columbia in particular) will occupy a position of great advantage as compared with other countries competing for this trade. It is to be noted that a considerable portion of the paper imported into Australia from Great Britain and United States was manufactured from pulp shipped from Eastern Canada. The freight charges (and customs duties, in the case of the United States) on this must materially increase the cost, and can be entirely avoided by manufacturing the paper in British Columbia.

The advantage of geographical position possessed by British Columbia in competing for the Oriental and Australian trade is shown by the following table of distances:

	From Vancouver (Miles)	From London (Miles)
Yokohama	4,283	12,186
Hong Kong	6,271	10,185
Shanghai	5,461	10,995
Brisbane	6,755	12,465
Sydney	7,265	12,558
Auckland	8,058	13,500

The local, or British Columbia, market amounts to about $150,000 per annum, in news and wrapping paper; while the North-West, as far as Winnipeg, would be practically reserved for British Columbia paper mills.

* * *

—The annual convention of the American Pulp and Paper Association and the National Paper Trade Association (wholesale paper dealers) will be held at the Waldorf Astoria hotel, New York, on the 7th Febraury next.

The Tariff Commission and the Paper Trade.

The Dominion Government's Tariff Commission, consisting of Sir Richard Cartwright, Hon. W. S. Fielding and Hon. L. P. Brodeur, has been carrying on its enquiries in Montreal, and in Toronto and other Ontario cities this month.

The representations made before the committee by deputations dealing directly with the paper and allied trades are summarized as follows:

The first of these was a deputation from the Toronto Typographical Union, consisting of J. Chinn, Wm. Powell and John Armstrong, who presented the following requests:

Tariff item 124—Books, novels or works of fiction, etc., increase from 20 to 35 per cent.; books printed, periodicals, and pamphlets, n.e.s.,etc., increase from 10 to 20 per cent. Item 464—Books on the application of science to industries of all kinds, prayer books, tracts, etc., instead of being free should be 35 per cent. Item 128—Bank notes, checks, or other commercial blank forms, and other printed matter, increase from 35 to 40 per cent. Item 129—Printed music, increase from 10 to 20 per cent. Item 126—Advertising and printed matter, increase from 15 to 25 per cent. Item 127—Labels for cigar boxes, etc., increase from 35 to 40 per cent. Item 131—Newspapers or supplemental editions or parts thereof, partly printed, increase from 25 to 35 per cent. Item 302 and 303—All stereotypes, electrotypes, celluloids, matrices, etc., increase from 1 1-2 to 3 cents per square inch.

"The Dominion Trades Congress have asked that the tariff be not raised," remarked Mr. Fielding to this deputation.

"Unfortunately some of those representative bodies don't represent anybody but themselves," Mr. Armstrong replied.

A deputation comprising W. P. Gundy, T. A. Brown, T. A. Weldon, H. L. Thomson, John Ritchie, J. F. Ellis, and A. F. Rutter, waited upon the commission in behalf of the paper manufacturers, stationers, bookbinders and printers. A number of recommendations were made, it being asked that a duty of 25 per cent. ad valorem be imposed on printing paper and paper of all kinds. An increase in the duty from 25 to 35 per cent. on paper sacks and bags of all kinds was recommended. The placing of mill board on the free list was also recommended. In respect to playing cards it was suggested that the item be changed to read "playing cards and card games." Mr. Thompson exhibited a number of samples of cards, such as Nations, Lost Heir and other kinds, which are supposed to be less harmful than the old-fashioned playing cards.

A deputation composed of J. F. McKay, Manager of the "Globe," J. A. Cooper, Editor of the "Canadian Magazine,", and J. E. Atkinson, editor of the "Toronto Star," came to make representations on behalf of the Canadian Press Association. Mr. Atkinson, who first spoke, wanted some more effective measures of protection against combinations than is offered by the Anti-Combine clause of the tariff. This clause provides that whenever the Governor-in-Council has reason to believe that any trust, combination, association, or agreement of any kind exists among manufacturers or dealers, the effect of which is to unduly enhance prices or in any other way to unduly promote their advantage at the expense of consumers, a judge shall be empowered to enquire and report. And if the judge reports that there exists such a combination or association or agreement and if it appears to the Government that the Customs' duties have facilitated it, the articles on which the combine exist, shall be put upon the free list or the duty so reduced as to "give the public the benefit of reasonable competition." The only enquiry which had ever been made under this clause had been instituted by the Press Association. And the Association had discovered its ineffectiveness, as there was no machinery for operating it. A judge was provided, but no means for prosecuting the enquiry. The judge was a judge and did not regard himself as a prosecuting-attorney. Mr. Atkinson submitted that to be of any real service the clause should be revised so as to provide for its own working.

The clause had been put into the tariff to guarantee to the consumers that the duties imposed upon the country for the benefit of the manufacturers would not be allowed to be unfairly used by them. The purpose of the clause was stated in the last words of it. The public is promised "the benefit of reasonable competition.". In the case of the Press Association it was obliged not merely to furnish a complaint but also to prosecute and to assume the expenses of the enquiry. The paper makers' association was represented by able lawyers and fought the matter step by step. To meet them the Government, although pledged in that anti-combine clause to protect the consumers and "give them the benefit of reasonable competition," did nothing. The enquiry would have fallen flat at the outset if the members of the Press Association had not gone into their pockets and put up an amount of $1,800, the costs of conducting the investigation. As the Ministers were aware, the result of the enquiry had been a report by the judge that a combine did exist and the Government had accepted that finding and reduced the tariff on paper to 15 per cent.

Mr. Fielding (with a smile)—You have still that $1,800 in mind."

Mr. Atkinson asserted that the Press Association still thought the treasury owed it the expense of that enquiry, but the important point was that with the revision of the rest of the tariff this clause also should be revised.

"I think," Mr. Fielding said, "the whole of Canada profited somewhat by the proceedings your association undertook. It was a warning to manufacturers that there was a power which could be invoked, and I have no doubt the effect was very wholesome."

Mr. Atkinson suggested that in future the Government should provide for the prosecution whenever a complaint shall be made upon what the Government may think is reasonable grounds. Not that a proved case should be brought to the Government in order to have it act. But that the Government shall do what is necessary to make good its promise to protect the public and insure it "the benefit of reasonable competition. The Commission happened in the city at a time when they must see by the newspapers how true it was that the Act did not prevent combines.

Sir Richard Cartwright—You refer to the plumbers?

Mr. Atkinson said he did, and went on to point out that this combination of plumbers had included the manufacturers, and was such a one, therefore, as should have called into operation the anti-combine clause of the tariff. The facts of the plumbers' combine had been published in the Toronto newspapers a year ago, but nothing had been done under the anti-combine clause of the tariff, and the proceedings which were now bringing the facts to light had been instituted by a private party whose business was being boycotted by the combine. The clause had not deterred the manufacturers of plumbers' supplies nor had it frightened other manufacturers from forming their organizations. He had heard of one man who was secretary, it was said, for forty secret trade associations of one kind and another. That some of them were formed in the image and likeness of the paper makers' combine was in the highest degree likely. Experience seemed to teach that although all these associations professed to have harmless objects, while those objects remained secret, they were often found to be engaged in holding up the consumer.

Sir Richard Cartwright asked whether a special prosecutor would meet the case, and Mr. Atkinson said that was what was in his mind. The Government should provide for the prosecution of combines in the same way that it provided for the prosecuting of other infringements of the tariff. Here was a clause which said that men who enjoyed the benefits of the tariff should not do anything to take from the public "the benefit of reasonable competition" in any article upon which there was a duty. It was a clause which should be given the same degree of effectiveness as was given to the anti-dumping clause, for whose operation a special officer was appointed to see that goods passed through the Customs shall not be undervalued.

Mr. MacKay, who followed, pointed out that daily newspaper publishers had no protection whatever on their products, and asked for the following additions to the free list: Stereotyping and electrical machinery, which are part of the press equipment, now admitted free; felt and rubber blankets and matrix paper used in stereotyping, now subject to 10 to 30 per cent., and that the duty be reduced or removed on electrotypes, stereotypes and matrices for the making of stereotypes for use in daily or weekly papers.

Mr. Cooper called attention to some tariff anomalies affecting weekly and monthly periodicals. They had to pay 25 to 35 per cent. duty on heavy paper and had no protection on the finished products. However, he did not ask for protection, but thought there might be some adjustments. The paper duty might be reduced, or perhaps the example of Australia might be followed, where they put a duty of six cents a pound on all magazines containing over 15 per cent. of advertising.

T. A. Staunton, of Stauntons, Limited, Toronto, headed a delegation of wall paper manufacturers from Toronto and Montreal, who complained that they were suffering from importations from the United States under the present tariff of 35 per cent., and the following was suggested as the revised scale: On paper invoiced up to 10 cents per roll, 25 per cent. and one cent per roll; 10 cents, and up to 15 cents, 25 per cent., and two cents a roll; 15 cents and over, 25 per cent., and three cents per roll. The imports, Mr. Staunton said, had increased from 600,000 rolls in 1900 to 2,480,000 rolls last year.

J. R. Barber, ex-M.P.P., spoke for the paper-makers. He said they did not ask for any changes for themselves. He was there to support the demands of their customers, such as envelope-makers, for more protection, for if they had the home market, it would enlarge the demand for paper. He also endorsed the request of Mr. Cooper for some form of protection against American publications, which are nearly all advertising. "A modern Canadian paper mill can hold its own against the world on newspaper," said Mr. Barber, "because we have the raw material here, but on book paper we cannot compete with the United States.'"

F. A. Ritchie, of Ritchie & Ramsay, New Toronto, pressed the claim for a duty of 2½ cents a pound on coated paper, but Mr. Fielding thought that was pretty high protection, amounting to 50 per cent. on paper costing 5 cents.

* * *

Swedish Kraft Paper Process.

A practical Swedish paper-maker contributes the following to "Paper-Making" of London:

The home of this excellent paper-stock is the Munksjo paper factory, near Jönköping, whence it made its triumphant entry into the Kraft Co.'s factory, and was afterwards introduced into such a large number of paper mills that at the present time the effects of the competition is being severely felt.

Nevertheless, the older factories have managed by dint of careful and correct methods of manufacture to retain their good name, so that their products are singularly enough still accorded a special preference.

Such is not, however, the case with the foreign-made imitation, which even when made to look externally similar, yet lacks in general the great durability, specific lightness, and—what is most important—the rag-like character of the true Kraft paper.

As I was personally engaged in the manufacture of this paper outside of this particular Swedish factory, I am therefore in a position to give the cause of this inferiority. This consists principally in the fact that neither during the boiling nor in preparing the fibre is the necessary care displayed.

It also frequently happens that the requisite care is not taken in sorting out the wood which is the best suited for a good tough product. As is well known the timber grown on the least greasy soil possesses a tougher fibre than that grown otherwise.

It is, therefore, a great error, and likewise prejudicial to the standing of any mill, to put what is well known to be a lower quality and cheaper brand on the market under the name of Kraft paper.

The main point in the superiority of this particular Kraft paper is that the wood is cut up into pieces of not less than three centimetres long, and this comes from the boiler into the kollergang in only a partly broken up state, and it is here that the chief operation is performed, the hollander playing but a very secondary part. The paper becomes still more improved if slight equalization of the beating is made by the use of a refining engine, either of the centrifugal or the Marshall type. No detrimental results are attached to the employment of stone rolls or hollanders with two rolls, one having bronze bars and the other roll being of stone, only so long as the best mills have not adopted this system, in connection with it, I might express for myself a stronger opinion concerning the matter if I were not opposed on principle to this innovation. I have, nevertheless, already had such bitter experiences through deviating from the old approved methods that I have become careful, perhaps too careful.

In addition to this the smaller pieces, or waste, as they fall away, should only be added in equally moderate portions to the beater. I can recommend for the waste the continuously-working pulp-breaker of Dietrich, of Merseburg (but in no case a kollergang), so as not to damage the fibre.

The Kraft paper is put on the market machine-finished and glazed from 35 to 200 grammes per square metre, and "M.G." or glazed one side 18 to 90 grammes per square metre, with or without the ribbed felt back.

By careful methods of working, I was able to produce a length of over 7,000 metres. This result is, however, not always obtainable, as one boiling does not always turn out the same as another. As a rule they are divided into two kinds, a light and a dark color; these original colors result from the manner in which the fibre is boiled, while the different tints are imparted to them by aniline or, less frequently, by earth colors. Kassler-brown, and also sulphate of iron, are used to attain this end with advantage. Boiling is, of course, done either in horizontal or, more frequently, in upright digesters, according to the plant installed in the various works. We reckon ordinarily that to a ton of wood about 150 to 180 kilos. of caustic soda is employed at 6 to 7 atmospheres steam pressure; the wood chips should be boiled from 10 to 18 hours. The boiling is so arranged that the heated alkali is circulated by means of a heating coil or pipes. The pulp is washed by sprays in draining chests with perforated bottoms; the alkali liquor is run off to tanks for recovery of the soda to be used again. This is the cheapest process. For the better qualities—viz., for bleached papers—the washing is done with drum-washers.

Where the best system and recovery plant is employed (and both system and plant differ in various factories), more than 80 per cent. of soda has lately been recovered.

In some mills the wood chips are forced by a Dietrich exhauster through the perforated bottom to the upper floor of the boiler-house, by which the wood chips become smaller through the friction (they being as though rasped), and lie so close to one another that a greater amount by more than 10 per cent. can be filled into the boiler. I have also worked with smaller installations, in which the wood chips (for each one of the aforementioned horizontal boilers) was emptied into ten iron waggons. Those waggons were furnished with perforated cylinders and were filled on rails placed in the boiler, and after the boiling were taken out again, and emptied into the respective drainers, to be further treated.

Recently the sulphate process has been employed on a more extensive scale. In this case the soda (NaO) which is for preparing the caustic soda, is entirely or partly replaced by the sulphate of soda or natrium-sulphate (Na_2SO_4).

This replacing of caustic soda by sulphate of soda or Glauber's salts is a very great improvement, seeing that Glauber's salts is much cheaper than soda and caustic soda, and also because by this means a greater percentage of output as well as a better and tougher quality of paper are possible. By using more or less caustic soda or sulphate of soda an experienced paper-maker is able to give to the cellulose a linen or cotton-like character, even where using the same quality of wood. The necessity of preparing the cellulose oneself is, therefore, highly important, if not absolutely necessary for the production of a good Kraft paper.

When we reckon that for a year's output of 4,000 tons, for which a water-power of about 400 h.p. is required, and with relatively modern apparatus, for boiling and soda recovery, together with the cheap price of Scandinavian wood, the cost of producing sulphate-pulp, which amounts ordinarily to only about ten kroners, it should be possible (given the present favorable prices of paper) to produce a very profitable article.

It is, therefore, no accidental phenomenon that in recent times (thanks to the strides made by the new processes) installations for sulphate pulp have been erected in ever-increasing numbers, and the manufacturers of paper and pulp have been able to command one increase in price after another.

When we further consider that sulphate costs at present as much as sulphite, we can easily estimate that the oft-repeated cry of hard times is in general quite groundless. Sulphate has also a great superiority over sulphite, in that the cleaning and preparation of the wood need not be so carefully handled, which means a great saving, not only in wages, but also in material.

As with all specialties, experience and sound methods are both necessary in the manufacture of Kraft paper in order to achieve success. On account of the low cost of its production and its good quality, Kraft paper bids fair to more and more compete with and oust rag papers from the market.

* * *

The Northern Sulphite Mills.

The issue is being made in London of £100,000 six per cent. first mortgage bonds to bearer, forming part of a total authorized issue of £150,000, in 15,000 bonds of £100 each, by the Northern Sulphite Mills of Canada. The company has been formed, under Canadian law, for the purpose of erecting sulphite mills at Sturgeon Falls, Ont. The erection and completion of the sulphite mills and the payment of the principal, premium, and interest secured by the first mortgage bonds of the Northern Sulphite Mills are guaranteed by the Imperial Paper Mills of Canada. The prospectus goes on to state that freehold land has been acquired suitable for the erection of the mills, for storage ground, and for all the requirements of the company. The land fronts the river, and is provided with railway sidings giving direct access to the main line of the Canadian Pacific Railway. Construction work is well advanced, and contracts for the buildings and the machinery are being placed, and the mills are expected to be in full operation by the early part of next year. The mills have been planned for a daily output of sixty to seventy tons (each of 2,000 lbs.) of sulphite pulp, dry weight, or a total output per annum of about 18,000 to 20,000 tons. For this product there is always a good market at profitable prices in Canada and the United States. Sulphite pulp is used in the manufacture of paper, and the great and increasing development of the Canadian and American paper trade ensures a constant demand.

A contract has been made with the Imperial Paper Mills of Canada, Limited, for that company to take a lease of the mills, when completed, for a term of thirty years, at an annual rental of £7,500. This rental is more than sufficient to pay 6 per cent. interest on the £100,000 bonds now issued and to provide for the redemption of these bonds at £105 per cent. by 1936.

In addition to this rental the Imperial Paper Mills of Canada, Limited, have agreed to pay to this company a royalty of two dollars per ton on all sulphite pulp manufactured by them at the mills. This royalty is estimated to produce $36,000, or about £7,200 per annum. This sum will be available for administration expenses, dividend on the shares of the company, and reserve.

The Imperial Paper Mills of Canada, Limited, own large paper mills at Sturgeon Falls, in the erection of which and the development of their property upwards of £300,000 have been spent. These mills are at present producing from fifty to sixty tons of paper per day. In their manufacture sulphite pulp is extensively used, the present supplies of which have to be purchased in the open market, and brought from a distance to Sturgeon Falls at a considerable cost. Compared with the price at present paid, the saving which it is anticipated will be effected by the Imperial Paper Mills of Canada, Limited, through manufacturing the sulphite pulp at the mills of this company at Sturgeon Falls should on the quantity at present used (without taking into account any future increase), provide a sum more than sufficient to pay the annual rental of £7,500. In addition to the quantity of sulphite pulp required at Sturgeon Falls in the manufacture of paper there will be a large surplus for sale to outside buyers, on which substantial profits should be realized by the lessees.

The proceeds of the present issue after payment thereout of all expenses and underwriting commission will be used, first, in the erection of the mills and in the purchase of machinery and plant and for other expenses incidental to the building and equipment of these mills, including bond interest during construction, and secondly in the purchase of such additional machinery and plant as shall be required by, and leased to, the Imperial Paper Mills of Canada, Limited. The rental of the additional machinery and plant (whether erected on the land comprised in the lease or not) will be included in the rent payable under the lease to be granted to the Imperial Paper Mills of Canada, Limited. As all the expenses of operating the mills and carrying on the business are undertaken by the lessees, it will not be necessary to set aside any part of this issue for the purpose of providing working capital.

The London office of the company is 62 London Wall, E.C., and the secretary is Wm. Tait.

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The Jenckes Machine Co., Limited, Sherbrooke, Que., recently shipped to the Haskell Lumber Co., of Montebello, Que., which is building a large new saw-mill, three 150 h.p. 72-inch diameter by 18 feet long, high-pressure tubular boilers, and a large bill of transmission machinery.

Reducing Paper Stock to Pulp

A United States patent for a process for reducing paper stock to pulp has been granted to Frank P. Miller, of Downington, Pa. The object of the invention is to reduce paper stock and separate the ground stock from material in circulation without interrupting the flow of the said material, so that the finished stock can be carried from the machine and new stock added for making the process continuous.

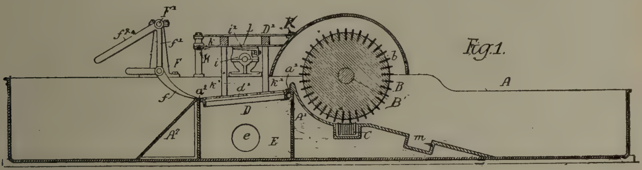

Fig. 1.

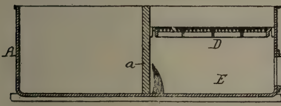

Fig. 2.

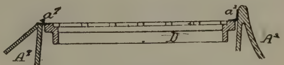

Fig. 3.

In the accompanying drawings, Fig. 1 is a longitudinal sectional view of an improved beating engine used in carrying out the process. Fig. 2 is a section of the line 22, Fig. 1, with the shaking mechanism for the screen removed, and Fig. 3 is an enlarged view of a portion of Fig. 1, showing the screen in detail. A is the vat, separated by the usual mid-feather **a**, forming two channels, through which the paper pulp is traversed. In one of these channels is a beating roll B, mounted on a shaft B, carried by suitable bearings and having knives **b**. CC are knives mounted in the frame of the machine, between which and the beating roll the pulp passes. A is the back-fall over which the pulp is carried by the beating roll B, and directly back of the back-fall is a screen D. This screen is suspended from a shake from D, which can be constructed in any suitable manner, and any means may be provided for shaking the frame, so as to agitate the screen. The screen in the present instance is made up of a number of plates, each plate being recessed on each side to form narrow slots, so that when the plates are assembled they form narrow slots for the passage of the pulp, as shown in Fig. 2. This screen may be perforated with circular holes or slots in any manner. The perforations are of such size as to allow the finished product of the machine to readily pass through the plate into the chest E, which is directly under the screen and from which the product is withdrawn, either by gravity or by means of a pump through the outlet passage **e**.

Beyond the screen D is a continuation A2 of the back-fall A. The unfinished product passes over the screen and over the back-fall and circulates through the channels, to be acted upon again by the beating roll. In the present instance the screen D is arranged on an incline from the back-fall A, so that the unfinished material will more readily pass over it; but it will be understood that it may be horizontal or at any incline desired, depending greatly upon the material being treated.

When certain classes of paper stock are being treated, particularly old paper, cardboard, books, etc., means are provided for catching the strings and like material, and this means consists in the present instance of a traverse shaft F, having a number of curved forks **f** arranged directly back of the screen D and in the present instance having their tips resting upon the upper portion of the continuation A2 of the back-fall. These forks are so arranged that the ordinary stock will pass between them, while the strings and similar material will be caught by the forks, and when these strings accumulate the operator simply turns a shaft F and raises the forks and removes the strings, which can either be collected for other paper stock or reduced in another machine. The shaft F in the present instance is suspended from a shaft F by arms **f**, and this shaft is operated by a lever **f2**, so that the shaft F and its forks can be moved out of the way when desired. While any suitable means may be provided to shake the screen D, in the present instance one form of shaking means is described as follows: Mounted on pedestals KK on each side of the vat are spring members **kk**, from which is suspended by bars **k** the screen D. I is a driven shaft having cams **i** thereon, which act against plates **i**, carried by the spring members **kk**. The shaft I is mounted in suitable bearings, and the shaft may be driven from the beater-shaft B, if desired, or it may be independently driven.

The back-fall A may be provided with a yielding lip **a**, which will overlap the frame of the screen D, so as to prevent the material from entering the chest E except through the screen. A like lip **a2** may be provided at the opposite end of the screen, which will overlap the portion A2 of the back-fall, Fig. 3.

The material to be reduced into paper pulp is placed in a vat with sufficient water. The beating drum is set in motion, so that the material will circulate in the channels of the vat and between the beating roll and the knives. The material is reduced by passing between the beating rolls and knives until it is in condition to be removed from the engine.

In its passage through the vat the material passes over the screen and there is sufficient suction caused by the agitation of the screen to draw certain particles of the material through the screen. These particles are those that have been reduced to the desired condition, and they pass into the chamber under the screen and are drawn out through any suitable pipe connected with any suction device, either gravity or pump, as desired. The balance of the stock circulates through the vat, passing under the roll until it is finally reduced to the desired condition, when it will pass through the screen into the chamber E. This process is continuous, and new stock can be added without stopping the machine. In fact, after the machine is once charged with paper stock the finished stock can be removed and additional stock added.

By an improved apparatus, which forms the subject of a separate application, rags, strings and similar material can be collected by the forks placed dirctly back of the screen, while wires, nails and other heavy foreign matter will collect in the bottom of the vat, and pockets **m** may be provided for this purpose.

This invention is claimed to be especially adapted for grinding and reducing old paper and paper stock; but it will be understood that it may be used in connection with any material which can be ground to a pulp to form paper.

In reducing some classes of paper stock it has been the practice to work the beating engine until all the stock is reduced to such a consistency that it can be transferred to a paper-making machine. It has been found in reducing the paper stock in this manner that a great portion of the material was reduced to such an extent that the fibre was destroyed, and consequently the paper which was made from the pulp was not strong. This is said to be obviated by this invention. The machine can be either used as a continuous machine or as an intermittently-operating machine.

CANADIAN PULP-WOOD SAMPLES IN NORWAY.

Writing of the result of the working up of samples of Canadian pulp-wood recently sent to Hönefos, Norway, by the Lloyds as a test, Mr. Phillips, editor of "The Paper Maker," now on a visit to Norway, says the reports are more or less misleading. Some journals had gone so far as to say that Lloyds had stated that they could import the wood from Canada far cheaper than they could buy it in Norway, and, further, that they had declared themselves so satisfied with the experiment that they had decided in future to import Canadian pulp-wood on a large scale. The editor goes on to say: "When visiting Lloyds' famous mills in Hönefos—which, by the way, I might state are still the largest mechanical pulp mills in Norway—I took the opportunity to speak to Mr. Wahlstrom on the subject. That gentleman was perfectly frank in his explanation. He said: 'Mr. Frank Lloyd was curious to know how Canadian wood would pulp at Hönefos and so he ordered a shipment of wood from the Shawinigan Falls district, in the Province of Quebec, which is the same wood which the Belgo-Canadian Co. and the Laurentide Co. are using.

"'I ground the wood, and found that it produced pulp about equal to good Norwegian. Here are some samples,' and Mr. Wahlstrom produced some excellent specimens, which certainly bore out his statement. 'What we wanted to find out was whether Canadian wood was as good as ours for the purpose, and whether the results would be better ground at Hönefos. That I am satisfied about. By our careful system of grinding and treatment of the pulp, straining and refining, you will see that the pulp produced is much better and more uniform than the Canadians make it.'" As to the reasons why he thinks Canadians do not make pulp equal to the Norwegians he says: "'First of all, I find that the reason that the Canadians do not produce a pulp of uniform quality is because they mix the woods, and, further, they do not grind fine enough—the pulp is often too coarse. Secondly, they do not seem to understand the necessity of using an efficient system of sorting and refining the pulp. Thirdly, their chief object being to produce a maximum of output, rather than striking the happy medium and obtaining better results. We do not intend to import Canadian pulp-wood. It would be a far too expensive a luxury for us to do this. It was simply an experiment, and our curiosity has been satisfied. We worked up about twenty tons from the imported wood.'"

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EUROPEAN PAPER TRADE AND CANADIAN PULP.

The German "Papier Fabrikant" says: French paper manufacturing, like that of nearly all countries, is enjoying a good time. Prices are not all they should be, but the coming year is looked forward to with confidence, and the result of this healthy state of things is that the cellulose manufacturers have practically sold ahead all their production for the years 1906 and 1907. Large quantities of wood pulp have come in from Canada. But it would appear that the French makers have found the Canadian raw material unsuitable for fine paper, although good enough for the heavy American productions, so that Scandinavians are the likely furnishers to France for the near future. So the French have found out what other countries have found out before them. Paper manufacture begins to occupy an important position amongst Belgian industries, and the Belgians have been active exporters of the product. From Scandinavia comes intelligence of an ever-increasing paper material industry—cellulose being the most restless. For years ahead most of the country's production of this essential is booked. The sales have been made at good prices. On October 23rd the Swedish Paper Union held its regular autumn sitting. From January to July the quantity of Swedish wood pulp and cellulose exported was thus: Dry cellulose, 123,712,559 kilogrammes; wet, 12,583,772 kilogrammes. Wood pulp—dry, 19,627,528 kilogrammes; wet, 31,845,429 kilogrammes. These figures compare with 116,767,221 kilos., 10,460,360 kilos., 27,090,970 kilos., and 41,768,385 kilos. respectively in the corresponding period of the previous year. Austro-Hungarian paper activity, otherwise healthy, suffers from the political disturbances. Here a sensational paper failure, however—that of the Olleschauer Paper Factory—has occurred to cast a shadow over the industry, the two debtors in respect to which have escaped punishment through self-destruction. It is hoped that this excellent business may yet be saved. Roumania encourages its home paper industry by means of duty-free entry of raw materials and a high duty on the finished article, and the local makers have syndicated, they being disposed to rule the market without straining the prices.

FORESTS AND CLIMATE.

The interest in deforestation and forestry may be called general and public. Whether forests exercise a perceptible influence upon the climate is shown perhaps most strikingly in almost the whole of Africa. That deforesting has assumed constantly growing proportions in almost every part of the world is still more apparent. The climate of Greece, where to-day only 16 per cent. of the area is covered with forests, has deteriorated. An increase of temperature and decrease of rain are noted, compared to ancient times, especially in Attica, which was thickly covered with forests about 3,000 years ago, and where hardly any rain now falls, while the heat in the open attains a degree which would make the "Olympian games" almost an impossibility. A similar condition exists in the Peninsula of Sinai, where thousands of years ago the people of Israel lived in a luxuriant and fertile country, and where to-day only forestless deserts abound. Palmyra, also once a flourishing oasis in the Syrian desert, presents to-day only a desolate waste of stones and ruins. In Mexico, where the Spaniards cut down the forests in the mountains, droughts changing to devastating floods are now noticeable, especially in the vicinity of the City of Mexico. In Upper Egypt, where only 100 years ago, rain was abundant, drought now usually prevails. In Algeria, where since the middle of the last century, the forests have been cut down on a large scale, dry weather has increased, and in Venezuela the level of Lake Tacarigua, to which Alexander von Humboldt drew attention, has been lowered in consequence of deforestation.

If these and other facts are kept in mind the sentence, "Man traverses the earth and a desert results," is understood. It must not be forgotten, however, that this applies mainly to the influence of civilization upon appearances, and is not always due to climatic changes produced by deforesting. Some authorities even deny the influence of forests on the weather and climate. It cannot be denied, however, that dense forests favor moisture, and prevent the drying out of the soil to a considerable degree. At any rate, deforesting, which in modern times assumes constantly growing proportions for industrial and agricultural purpose, is of universal importance.

Germany, says Kuhlow's German Trade Review, with a forest area of about 26 per cent., realizes annually nearly $60,000,000 worth of timber therefrom, while the wood importations are about of the same value. The consumption of wood increases from year to year, and systematic forestry has not succeeded in keeping up the forest area in Germany. If it is furthermore borne in mind that Canada, which formerly possessed more than 300,000,000 acres of forests, has to-day only a forest area of about 225,000,000 acres, it becomes evident that the question of deforestations assumes greater importance. If civilization continues to change the face of the earth the problem of its wood supply will present itself like that of coal and force the finding of a suitable substitute.

THE NEWFOUNDLAND PULP INDUSTRIES.

The St. John's, Newfoundland, Herald learns that H. J. Crowe wired the Timber Estates Company in that city that the negotiations for the acquisition by a London syndicate of the Exploits, Glenwood, Gander and New Lands timber areas, to be the basis of a pulp enterprise as large as that of the Harmsworths, are completed and the documents signed. The syndicate is headed by the Pearsons, the great rival of the Harmsworths in the publication of papers and magazines in England, and Coates & Co., the famous bankers, who have acted for the colony in certain financial transactions in the past. The syndicate puts up a substantial sum to despatch experts at once to report on the forest growth and the water powers of the areas in question, and if these are as represented operations will be started as soon as spring opens, and the erection of the mills pushed.

The Harmsworth Company will not operate their saw-mills at Millertown the coming winter, because (1) it is intended to move the mills from there to Grand Falls, and (2) the logs cut last winter will be all used in building the big dam for the pulp mills. The company have surveying parties already at work delimiting the water-shed, and are also building a branch railway from the main line of the R. N. C. to the area at Grand Falls where all their mills will be located. This railway will be finished before the snow comes, and the expeditious moving of material there will thus be assured.

The plans of the ground where the mills will be located are practically completed and will be despatched to New York in the near future to enable Mr. Hardy, the water-power expert, and his assistants, to lay down the sites of the dam, mills, warehouses, etc. The main plan is one of the largest ever prepared in this island, being a sheet 7 by 10 feet in size, and only one draughting table in the city, and that in the Crown Lands' office was large enough to contain it; and the use of this was availed of by the Harmsworth draughtsmen with the consent of the Government. This plan, which is on a very minute scale, shows the level of the ground for every five feet of the area of 214 miles embraced in the section where the headquarters will be, so that the New York experts will have an accurate description of the whole ground and be able to perform their part of the work with the greatest accuracy. As soon as the plans are perfected by locating the sites, construction work at Grand Falls will start.

CARRIER, LAINE & CO.

The citizens of Levis, Que., have reason to remember with sorrow the month of November, 1905. Practically the whole city depends on the great industrial establishment of Carrier, Lainé & Co., which employs directly about 400 hands, and indirectly maintains in business most of the merchants, etc. During the absence of Mr. Carrier a demand of assignment was made upon the firm by the Bank of Montreal, which has a claim amounting to $164,431.89. The firm did a large business, and the total liabilities are said to be in the neighborhood of $1,000,000. The firm manufactured machinery of almost every description used in Cnaada, and were also manufacturers of stoves and agricultural implements. One of its specialities in machinery was pulp and paper mill equipment, they having recently taken the representation in Canada of special machines made by some leading pulp and paper machine firms of the United States. The suspension of work on which so many people in the ancient town of Levis depended is particularly unfortunate at this time of the year, and the "Quotidien" says that unless some arrangements are made for resumption of operations there will be many a desolate fireside there during the winter. It is this aspect of the case as well as the happy relations that have prevailed between employers and employees for so many years that make the suspension such a sad event for the members of the firm. The business was founded in 1862 by Carrier & Reverin, with whom were associated Messrs. Dagneau and Vallee, and has been steadily expanding since its commencement. The members of the firm and their employees will have the sympathy of a large circle of friends, and it is hoped the business will soon be rehabilitated on a solid foundation. The following is an extract from a very sympathetic article in the "Quotidien" referring to the difficulties of the firm, and to Mr. Carrier personally:—

"Le malheur inattendu qui vient de frapper notre excellent concitoyen, M. C. Henri Carrier, le propriétaire des grands éstablishments Carrier, Lainé & Cie, a soulevé dans toute la ville, autour de lui, un courant de sympathies véritablement touchantes; l'esprit de solidarité de la grande famille Lévisienne ne pouvait se manifester d'une façon plus éclatante et nous espérons que toutes ces sympathies apporteront à notre concitoyen la consolation dont il a besoin pour se relever du malheur qui le frappe et continuer l'oeuvre du grand citoyen dont tout Lévis bénit encore la mémoire dans son digne successeur."

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QUEBEC PULP-WOOD ASSOCIATION.

The Province of Quebec Pulpwood Association held a special meeting at Sherbrooke, on the 28th ult.

The President, H. M. Price, of Quebec, presided, and among well-known lumber dealers present were: D. H. Pennington, St. Julie Sta.; A. G. Auger, Quebec; E. W. Tobin, M. P., Bromptonville; John Champoux, D'Israeli; A. C. Miquelon, Danville; O. C. Morissette, F. N. McCrea, B. C. Howard, Sherbrooke, and N. T. Turgeon, St. Francois.

The object of the meeting was to consider the new aspect of the pulp-wood industry. The United States Government and the United States Courts placed different interpretations upon the tariff clauses. One week the order goes forth to collect duty on all pulp-wood; then it is on rossed pulp-wood, then all pulp-wood is admitted free. The Quebec pulp-wood dealers feel that they should protect themselves against these suddenly changing interpretations of the American tariff.

A resolution was passed recommending that all export pulp-wood sales be made F.O.B. in Canada. Canadian dealers are prepared to take the consequences of actions of Canadian Government, but not of the United States Government. In cases of shipments' delivery at the mills in the United States, it is recommended that a clause be inserted in the contract that all customs duties and similar charges be paid by the buyer.

Resolutions were also passed urging improvement in preparation, length and quality of pulp-wood.

It was also decided to discontinue advances to farmers on pulp-wood purchases for twelve months.

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CANADIAN FORESTRY ASSOCIATION.

The Executive Committee of the Canadian Forestry Association has had a meeting, and has outlined the main features of the programme of the convention to be held at Ottawa on the 10th, 11th and 12th January next. This programme is subject to alterations and extensions, but it will be seen from the papers and addresses in preparation that the scope of the convention will be very wide, and will touch a great variety of commercial and industrial interests as well as topics bearing on scientific forestry. The convention will be the most important ever held in connection with these far-reaching interests.

The following are the papers and addresses so far arranged:

Wednesday, 10th January.

10 a.m.—Preliminary business.

President's address—The Right Honorable Sir Wilfrid Laurier.

Address by the president of the Canadian Forestry Association, E. G. Joly de Lotbiniere.

Address by Gifford Pinchot, Chief of the Forest Service of the United States. (It is proposed to invite His Excellency the Governor-General to be present at this session and address the convention.)

2 p.m.—The Nation and the Forest.

"Dominion Forestry," E. Stewart, Dominion Superintendent of Forestry.

"Forest Reserves," Thos. Southworth, Director of Forestry for Ontario.

"Forest Fires," Dr. Robert Bell, Acting Director of the Geological Survey.

"Railway Motive Power and Forest Protection," Cecil B. Smith, chairman of the Temiskaming Railway Commission.

Thursday, 11th January.

10 a.m.—Forestry in Relation to Agriculture.

Address by Hon. Sydney Fisher, Minister of Agriculture for Canada.

"Forestry in Older Canada," C. C. James, Deputy Minister of Agriculture for Ontario.

"Forestry on the Experimental Farms," Dr. Wm. Saunders, Director of Experimental Farms.

"Forestry in the Eastern Provinces," Rev. A. E. Burke, Alberton, P.E.I.

"Forestry and Irrigation," J. S. Dennis, Director of Irrigation for the Canadian Pacific Railway.

"Tree-planting in the West," Norman M. Ross, Assistant Superintendent of Forestry for Canada.

2 p.m.—The Forest and the Lumber and Pulp-wood Industries.

Address by Hon. W. C. Edwards, President of the Quebec Limit Holders' Association.

Paper by a representative of the Ontario Lumbermen's Association.

"The Forests of Nova Scotia," F. C. Whitman, President of the Western Nova Scotia Lumbermen's Association.

"The Lumber Industry in British Columbia," F. W. Jones, President of the Mountain Lumbermen's Association.

"The Pulp-wood Industry," H. M. Price, President of the Quebec Limit Holders' Association.

Friday, 12th January.

10 a.m.—The Relation of our Forests to our Other Industries.

"The Wood Supply of the Railways," W. F. Tye, Chief Engineer of the Canadian Pacific Railway. (A representative of the Grand Trunk Railway.)

"Water Powers," C. H. Keefer, C.E.

"The Forest and the Mine," Frederick Keffer, Manager of the British Columbia Copper Company.

"The Pulp and Paper Industry in Canada," E. B. Biggar, Editor of "The Pulp and Paper Magazine."

"Newspapers and the Paper Supply," a representative of the Canadian Press Association.

"The Manufacturers' Wood Supply," J. K. Osborne, Vice-President of the Massey-Harris Company.

2 p.m.—"Forestry Education," Monsignor J. U. K. Laflamme, University of Laval.

"Scientific Forestry," Dr. Judson F. Clark, Forester for the Province of Ontario.

Report of Committee on Resolutions.

PERSONAL.

The partnership between Little & Walker, consulting paper mill chemists, Boston, has been dissolved by mutual consent. Arthur D. Little will continue the business at the present office of the firm, 93 Broad Street, Boston, and is authorized to collect the outstanding accounts of the firm and will pay the outstanding liabilities, if any. William H. Walker will carry on a consulting business at 24 Trinity Place, Boston.

At a meeting of the executive of the National Paper Trade Association of the United States this month, W. C. Ridgway, who has been acting temporarily as secretary, was appointed permanent secretary, with headquarters at 41 Park Row, New York.

Beauchamp H. Smith, second vice-president of the S. Morgan Smith Co., of York, Penn., died at his home in Los Angeles on November 1st, at the age of thirty-six years. Mr. Smith went to Los Angeles about five years ago for the sake of his health, since which time he has resided there, and great hopes of a permanent recovery were held by the family.

R. H. Campbell, of the Department of the Interior, has been promoted to be chief clerk in charge of the Timber and Mines Branch of that department. As secretary of the Canadian Forestry Association Mr. Campbell has done valuable public service outside of his departmental work and his energy and industry have well merited this promotion.

Herr A. Scheck, the forestry expert of Germany, who is investigating the pulp-wood possibilities of Canada, has returned from the Pacific Coast, and will probably be at the forestry convention at Ottawa in January. Mr. Scheck in the meantime is visiting Northern Ontario and Northern Quebec. Herr Scheck is impressed with the immense quantity of pulp-wood available in British Columbia, but expects ultimately that the British Columbia pulp and paper trade industry will look to Australia and Eastern Asia, as its field rather than Europe or even Eastern Canada, on account of cost of transportation across the continent.

J. A. DeCew, B. A. Sc., has opened up an office as consulting chemical engineer in the Sun Life Building, Montreal. Mr. DeCew, who was for three years chemist at the Canada Paper Company's mills, will make a specialty of pulp and paper mill work. He is equipping his laboratory with the most modern and accurate apparatus that he can buy, for the purpose of paper, pulp and commercial testing, and this is not the easiest thing in the world, as much of it will have to be imported. As Mr. DeCew's ancestors as far back as his great-grandfather have all been Canadian lumbermen, he was naturally brought up in the business. His early business training has all been in this industry and he has been engaged in it both in Ontario and on the Pacific Coast. Some time ago he decided to enter a field which would combine industrial and technical training and spent a year in post graduate work at the School of Practical Science, Toronto, in the study of cellulose and the chemistry of wood. During that time he read an article before the Canadian Institute on the chemistry of wood. Two other papers were published in proceedings of the Engineering Society of the School of Practical Science, one on the "Chemical Wood Pulp," and the other on "Our Timber Supply." After his post-graduate year in cellulose he spent a year with Dr. Ellis, Provincial Analyst, in general analytical work. Thence he went to the Canada Paper Company as their chief chemist, where he remained three years.

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The Minister of Education for Ontario has announced that a chair of forestry will be founded soon in Toronto University.

The Standard Paper Company, whose incorporation was noted some months ago, are negotiating with Cannington, Ont., for establishing of a paper mill there. The company ask right-of-way, cash bonus of $10,000 to build an electric railway for their own and public uses into a marsh in the township of Brock, east of Lake Simcoe. The company will undertake to build a mill to employ steadily from forty to fifty men. W. G. A. Lambe, Toronto, is president of the company, and T. W. Kneeland secretary-treasurer. The company has a capital of $250,000. It is the purpose to make cardboard from the marsh peat, using the peat without admixture of wood pulp.

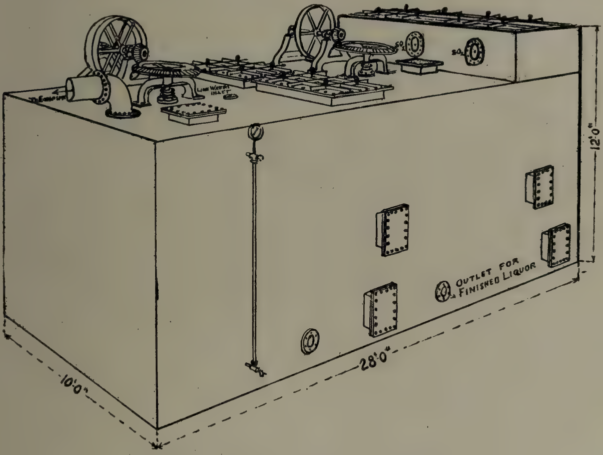
THE STEBBINS BI-SULPHITE LIQUOR APPARATUS.

It is generally conceded among sulphite pulp-mill men that the most valuable improvement in the construction of acid making appliances for sulphite plants brought out in recent years, is the recently-patented Stebbins Bi-Sulphite Liquor Apparatus, which is being introduced and built by the Stebbins Engineering and Manufacturing Company, of Watertown, N. Y.

The first apparatus of this sort to be put into operation, was installed immediately after the patent was allowed, in the plant of the Berlin Mills Company, at Berlin, N.H., and since that time the same company has installed and put into operation a second one, and, further, has placed an order for a third, which is intended to be installed when the contemplated enlargement of the sulphite plant to 150 tons per day is carried out. The Riverside Fibre and Paper Company, of Appleton, Wis., and the Publishers' Paper Company, of Portsmouth, N. H., have also placed contracts, and will install these new liquor making apparatus in their plants now in course of erection.

These installations are a strong endorsement of the invention, because the managers and experts of the firm mentioned are men of wide experience, who have spent many years in solving intricate problems met with in the operation of sulphite plants, and which are out of sight and unseen by the less experienced.

The points claimed for this invention are that the tanks are air-tight and acid-proof, that there are no pipes to crack or wear out, and no wood staves or joints to leak, and that the saving in building space alone will justify its first cost.



Stebbins Engineering Co.'s Sulphite Liquor Apparatus.

The Stebbins Engineering and Manufacturing Company is also embodying, in the design and equipment of the plants it is now building, several improvements, having for their purpose better economy of labor and raw materials, and by which it is expected the cost of producing sulphite will be reduced nearly $2 per ton, as compared with their former successful achievements in this line.

PULP AND PAPER MARKETS.

Canadian paper manufacturers have been running full time during the past month, the only complaint being on the subject of prices. There has been a considerable increase in the past few months in the amount of Canadian paper exported, but the manufacturers prefer the home market and are rather inclined to make sacrifices to home customers. In consequence there has been more or less cutting in news, cheap book papers and wrapping papers. The best feature of the home trade is the North-West, but competition from Chicago is felt in that quarter. A meeting of Canadian paper manufacturers is called for December 1st in Montreal.

The pulp mills are busy in Ontario and most parts of Quebec, but the Maritime Provinces are suffering from low water, some of the mills being closed. The same trouble from drought is causing anxiety among the pulp manufacturers of Maine, and there is fear that this trouble may extend through the winter. The consequence of this state of things in Eastern Canada and the States is that the price of pulp is stiffening. Canadian ground wood is stiffening in price and is quoted at $19 to $22 per ton delivered at United States mills. Canadian sulphite is quoted at $1.80 to $1.90 per cwt. in the home market, or $1.85 to $2.15 delivered at United States mills.

Prices of all kinds of pulp in the British and Continental markets are firm and large orders are being placed since it became evident that the pulp men would not have to yield.

RAG AND PAPER STOCK MARKET.

November 22, 1905.

Reports from London indicate a fair demand for most kinds of rags with very firm prices. French packers report a good export demand, and shipments from Germany and Belgium are increasing.

In New York there is an uninterrupted demand for nearly all grades. Stocks are moving steadily and there is no accumulation. The same may be said of paper stocks, and prices are steady and firm.

The same steady tone prevails in the chief domestic markets of Montreal and Toronto, and there is no noteworthy change in quotations.

No. 1 white shirt cuttings..	$5.25	to	$5.75
Light print cuttings......	4.00	to	4.50
Unbleached cuttings.....	4.50	to	5.00
White shoe clips.........	4.50	to	5.00
Colored shoe clips........	2.75	to	3.25
Domestic white cottons...	2.25	to	2.50
Blues and thirds..........	1.40	to	1.50
Roofing stock	.60	to	.70
Waste papers	.35	to	.40
Manilla rope	2.25	to	2.50
Bagging	.65	to	.75

CHEMICAL MARKETS.

Toronto, November 23, 1905.

There is a good demand in Great Britain for sizing materials such as glue, gelatine, etc., and prices have been advanced about two shillings per cwt. Other chemicals are steady and prices quoted are: Ammonia alkali, 58 per cent., stands at £4 10s. to £4 15s.; caustic soda, 76-77 per cent., £10 7s. 6d. to £10 12s. 6d.; bleaching powder, soft wood, £4 7s. 6d. to £4 12s. 6d.; soda crystals, £2 17s. 6d. to £3 2s. 6d.; salt cake, £1 10s. Alum and sulphate of alumina unchanged. China clay, mineral white, etc., in good request at former quotations.

New York reports alkali active with buyers anticipating higher prices. Domestic high test has been sold at 75c. for light in bulk, 80c. in bags, and 80c. for dense in bulk, and 85c. in bags. Bleaching powder for 1906 delivery is sold on basis of $1.25. Caustic soda, very firm. Domestic high test at $1.75 to $1.80, f.o.b. works. Alum is quoted at $1.75 to $1.80 for lump, and $1.85 to $1.90 for ground. In brimstone, despite large receipts of domestic, stocks are not sufficient for present requirements. Prices have advanced $22.25 to $22.75 for next year's contracts. There has been a more active demand for China clay, with quotations very steady at $11.50 to $12.50 for imported.

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COTTON RAG PAPERS.

The specific tendency of the cotton fibre, especially in the unsized state, to roll and curl up so as to form clots is well-known. "M.," writing in the Papier Zeitung, says these clots are not, however, "knots" in the true sense of the word, and they are easily disintegrated by gentle agitation, such as pouring the pulp from one vessel to another. The rolling up of the fibres is caused on the one hand by the friction of the arms of the agitator on the pulp, but on the other hand, in a far greater degree, by the friction of the pulp against the sides and bottom of the stuff chest. The trouble will be greater the rougher the internal surface of the chest, and it can be obviated to a large extent by lining the stuff chest with glazed tiles. The fibres will then tend to slide over the glazed surface, instead of rolling. Reducing the speed of the agitator and discharging the pulp into the chest simultaneously with a large volume of water will reduce the evil, but will not prevent it entirely. The ease with which the clots are disintegrated in the presence of water enables them to be disposed of in the knotter. If the knotter be adjusted so as to give the greatest possible vertical motion, i.e., to work with a heavy "jog" the beating action of the knotter plates on the pulp will completely unroll the clotted bundles of fibres. It is true that a violent action of the knotter permits a few of the true knots, i.e., unreduced particles of rag and thread in the pulp, to pass through into the paper, but a pulp which has been carefully and thoroughly prepared in the beater, ought not to contain a serious proportion of such knots.

Forestry and Pulpwood

The steamer Amethyst will take a cargo of pulp-wood from St. Ann's, N.S., to Portsmouth, N.H. The cargo is being shipped by the North River Lumber Co.

Market reports regarding timber and lumber indicate an active demand and firm prices. The demand from the States for pulp-wood is an influential factor in the market, and large areas are being acquired in Canada by the pulp manufacturers where they can get them.

Two large rafts of pulp-wood which were being towed from Musquash around to Mispec went to pieces last month and drifted out to the open sea. Rainy weather caused the rafts to fall to pieces. The rafts were the property of the Inglewood Pulp Company, and are estimated to contain a million feet of pulp-wood.

Following up his action against the plumbers' combine in Toronto, whose affairs are being ventilated in the courts, the Crown Attorney, J. W. Curry, has taken the bold step of seizing the books of James Hardy, of Jenkins & Hardy, brokers and accountants of Toronto. Mr. Hardy was secretary of the Canadian Paper Manufacturers' Association, recently dissolved, and of the Tar Paper Manufacturers' Association, the Stationery Manufacturers' Association, and various associations in other lines of manufacturing, such as the stone and hardware trades. In giving his reasons for making these seizures Mr. Curry said that these associations had no financial assets, but their members were the heads of concerns doing huge businesses. If their object was to swell prices beyond the true value of the commodities he holds that they are guilty of illegal combination. His investigation may extend over six months, but Mr. Curry intends to carry it to a conclusion.

James Conmee, M.P.P., of Toronto, who represents the Rainy River district, states that the Ontario cut of lumber this year will be 450,000,000 square feet or 100,000,000 square feet greater than last year. Of this 150,000,000 will be cut in the Rainy River district for use in Winnipeg and the North-West. The remainder will be cut in the Ottawa valley, north and west of the Mattawa river. There is nothing to interfere with a big cut. The labor conditions are much similar to last year, only men are more plentiful. The difficulty during the past year has been that the companies were unable to get used to the conditions. Five years ago an expert bushman got only $18 a month. Now he is given $26 to $35 a month. Bush teamsters who are used for pulling logs around in the narrow bush roads, earn about $40 a week. The Finlanders and Swedes take to the bush naturally, but no other immigrants find their way into that country to any extent. The comfort of the men is looked after much better than it was half a dozen years ago. The food is the great improvement. A cook who has charge of the feeding of seventy-five men is paid as high as $100 a month.

United States firms are now beginning to draw supplies of pulp-wood from Cape Breton. The Sydney "Record" reports that a steamer is to load a cargo of pulp-wood at Murray, Victoria County, for the States. The North River Lumber Company's peeling mill has been working to its full capacity during the past four months. A large number of men, under superintendent Bateman, are cutting, hauling and sawing in the woods. This work will be continued during the winter months, and the biggest drive in the country's history, it is expected, will be the result in the spring.

Mill Matters

Wm. Purcell, aged 59, married, employed at the Miramichi Pulp Mill, Chatham, N.B., was instantly killed on the 21st ult., by being run down by a locomotive in the company's yards.

The Spanish River pulp mills are now in full operation and are producing 60 tons per day of a fine quality of pulp.

Authority has been given to the Riordon Paper Mills, Limited, to increase its capital stock from $1,000,000 to $2,000,000.

An item in last issue, taken from the "Labor Gazette," stating that the Riordon Paper Mills' sulphite mill was running half time is incorrect. This mill is running twenty-four hours a day.

Premier Tweedie, of New Brunswick, while on a recent visit to Portland, Me., to confer with Hugh J. Chisholm, as to the purchase of the Wm. Richards Lumber Co. timber limits, confirmed the report that the purchase had been made by the International Paper Co.

The Brompton Pulp and Paper Co. is closed down, and about 130 employees have been thrown out of employment. The company manufactured pulp only. The demand until this summer was very good across the line, where their output chiefly went, but a few months ago the trade fell off, with the result that the company had a large stock on hand, and, as money is none too plentiful at this time, the directors deemed it advisable to close down until the surplus stock was reduced. The closing of the mill is a serious loss to Bromptonville, for the majority of the employees have already gone to other centres for work. The company has also reduced its lumber crews at their timber limits, and only a small cut will be made this year as they have a large supply of logs held over from last year. The Sherbrooke "Gazette" says: The concern is strong financially, but of late the American demand for pulp has not been brisk, and the company have no other outlet for their output. They have spent about a million dollars on power plant at Bromptonville. It is their intention to diminish the cut of logs the coming winter. As soon as the pulp market recovers the mills will be started again.

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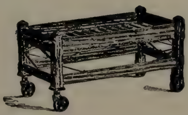

THE CANADIAN FAIRBANKS COMPANY, Ltd.

Montreal Toronto Vancouver Winnipeg

There are three pulp mills in the vicinity of Bridgewater, N.S., one at New Germany, owned by A. & F. Davison, under the name of La Have Pulp Co., Limited, with headquarters at Bridgewater, Joseph Feinder, New Germany, being manager; one at Mill Village, Queen's County, owned by the Nova Scotia Wood Pulp and Paper Co., Limited, manager, Walter Graham, Mill Village, and the other at Milton, Queen's County, run by the Indian and General Trust Co., with John S. Hughes as manager. We understand that all of these mills are shut down at present on account of lack of water, this being an

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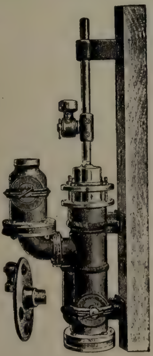
unusually dry fall, but they will start just as soon as the rains come. The larger portion of their output is shipped to England.

The large factory of the Major Manfg. Co., Montreal, manufacturers of paper boxes, was gutted by fire on the 2nd inst., stock and machinery to the value of $60,000 being destroyed.

The Lake Superior Corporation, Sault Ste. Marie, now manufactures butcher's manila as well as building paper. About eight tons of manila can be made a day and the machines will be kept making it and building paper at different times, according to the orders received. The butcher's manila will be supplied principally to the market of Western Canada.

A cablegram has been received at Vancouver by J. M. MacKinnon, resident manager of the Oriental Pulp and Paper Company, that the necessary funds have now been subscribed and that the work of installing the proposed pulp and paper plant of that company will soon be started. He expects that by the latter part of 1906 a portion of the plant will be in operation. The works will be located at Swanson Bay, on the mainland coast, opposite Princess Royal Island. Leases are held of 84,000 acres of pulp-wood land, and some preliminary work has been done.



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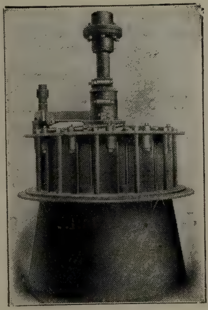

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We have supplied many of our Samson turbine water wheels to pulp mills for direct connection to grinders, for driving beaters, and, in fact, for all power purposes.

The Samson has an even and regular speed under all changes of load, ensuring better and more even quality of pulp and an even output from the paper machines.

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Beaters and Edge Runners can be filled in from one to two minutes if the pulp is first disintegrated by one of the Wurster Engines, while the output is larger with the same power. These Engines do four times the work of stones, and neither shorten, affect, crease, or wet the fibre in any way, nor change the color or the sizing. They can also be used for Kneading Clay and other Fillers, and Bleaching Powder.

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ENGLAND.

The St. Maurice Valley Railway is in electric railway, twenty-five miles long, now being built to connect Shawinigan Falls with St. Maurice. The Belgo Pulp and Paper Co., of Shawinigan, found that freights on their supplies, and on the output of their mill were excessive, and, failing to secure any assurance of reduction, decided to build a railway for themselves, hence the enterprise now being carried out with energy by the company, encouraged by other interests at Shawinigan.

The "Wabigoon Star" says: Yet another stage of the Dryden proposed pulp mill has apparently been reached, necessitating the visit of Chas. B. Gordon, managing director of the Dryden Board Mills, to Dryden. Mr. Gordon was accompanied by F. H. Lawrence, of New York, whose mission is to examine the timber resources of the surrounding country, estimate the quantity available for pulp mill purposes, and report accordingly to the proposed company, and for this purpose steamboats, rigs and other conveyances have been placed at his disposal. Mr. Gordon was seen by a representative of this paper, but that gentleman was not then prepared to give anything out for publication, further than to state that work in connection with the pulp mill was likely to commence this year, and that there might be an agreeable surprise for the people interested in the course of a very few weeks.

The "St. John Telegraph" and the "Daily Sun" report developments regarding the Mispec pulp mill. The Mispec pulp mill, lately taken over by Stetson Cutler & Co., has started operations. The average output, it is intended, will be thirty tons a day, but this can be increased to forty by the addition of a few more driers. It is expected that this will be done next spring. The Inglewood Pulp and Paper Co. have two mills in operation in Musquash at the present time. The new saw-mill will cut the logs to be used in the Mispec mill. The company has an up-to-date method of bringing the logs out for manufacture. A sluice is constructed from Stillwater dam, a distance of three miles, and through it the logs are brought down to the harbor at the rate of one every second. The logs so far taken from Musquash to Mispec have been towed in cribs holding about 60,000 each, but henceforth the two-foot pulp logs will be towed to the pulp mill in three barges, lately purchased for the purpose. The barges have a frame work top built about eight feet from the deck. The carrying capacity of each is 300 cords. Arriving at Mispec the logs will be thrown into a cistern built of crib work. Into the cistern is an immense continuous belt running to the hill top, and on this the logs will be taken up to be stored for use during the winter. The Inglewood Pulp and Paper Co. have at the present 50,000,000 feet of logs in the Musquash river. They have 600 men employed for their operations, and have a contract with McLaughlan Bros. for the delivery of about 2,000,000.

* * *

A correspondent of the "Montreal Witness", says there has passed through

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the Rouge booms over one million six hundred thousand saw logs and timber. Of these the Riordon Pulp and Paper Mills got about seven hundred thousand pieces, the G. H. Perley Company about 600,000 pieces, the balance being divided among the local mills. The G. H. Perley mill sawed over fifteen million feet, board measure. Some of the logs of this company were rafted at the Calumet, and towed up river to Eddy's mills at Hull, and a few went by rail to the Babcock & Wheeler Lumber Company, St. Regis, N.Y. This company is moving their business to Calumet, where they can get more readily a supply of

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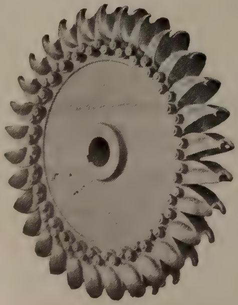

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logs from the G. H. Perley Company. They have commenced erecting their mill close to that of Mr. Perley, and some families have already moved over from St. Regis to Calumet.

* * *

THE COUNTERVAILING DUTY.

A Washington special says: The United States has concluded to drop its contention that an additional duty should be levied on wood pulp, the product of pulp-wood cut from crown lands and private lands in the Province of Quebec. This information is contained in a letter written by James B. Reynolds, assistant secretary of the treasury, to the collector of customs at Plattsburg, N.Y. The case is of considerable interest to manufacturers of wood pulp and paper, and has been in litigation for several years, the American Government insisting that it had the right to collect a countervailing duty on all wood pulp irrespective of whether the product came from wood cut on crown or private lands. This contention was

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recently declared illegal by the United States circuit court for the northern district of New York. The court affirmed an earlier decision of the Board of Appraisers, and held that the United States can only exact a countervailing duty on wood pulp produced from wood cut from crown lands. The treasury department has maintained that Quebec pays a bounty on all wood pulp sent to this country, and that the merchandise thereby became liable to the extra duty upon importation into the United States. While the test case has been under consideration many cases have been placed on the suspended files of the Board of Appraisers. These will now be decided on, and large refunds made to importers.

CANADIAN PULP-WOOD IN THE WATERTOWN DISTRICT.

In view of the questions raised as to the available supplies of United States wood for the mills of the Watertown district of New York State the following letter from the Watertown correspondent of the Paper Trade Journal of June 13th is of interest: A joint meeting of the paper and pulp manufacturers, officers of the Watertown Chamber of Commerce and others interested in the improvement of navigation on Black River Bay so that vessels of large size can reach the docks at Dexter was held on Thursday of last week, Congressman Knapp being present. He has been successful in securing a survey of the channel, and an estimate of the cost of making the bay navigable is being prepared. While the paper mills in the Black River Valley will be the principal beneficiaries if the proposed improvement is made, other industries will also be benefited. It was agreed that the Chamber of Commerce would take up this matter as vital to all the interests in the Black River Valley. It would furnish a water competition and practically put all points in the valley on a lake port. The principal object is to secure pulp-wood from Canada, of which the mills at Dexter alone use a large quantity, and if it were an available port it would make a distributing point for this article to all mills on the river. The growing scarcity of pulp-wood in this section makes the drawing on Canadian forests imperative, and water transportation is the most economical for getting the supplies. The facts as drawn out at the conference showed $10,000,000 capital invested along Black River in need of the improvement of this port. Many facts had already been presented to Colonel Adams, the Government engineer. The Chamber of Commerce will send a letter stating further facts, and the manufacturers of the entire district will be solicited to add their appeal for a favorable report on this work. The stumbling block so far seems to have been that Dexter can show no lake commerce, but the reason is that a bar at the mouth of the river prevents it. With a navigable channel there is no question whatever of a large amount of commerce in Canadian pulp-wood coming to all the mills. The improvement would develop more commerce than is held by many lake ports that are in receipt of large annual appropriations.

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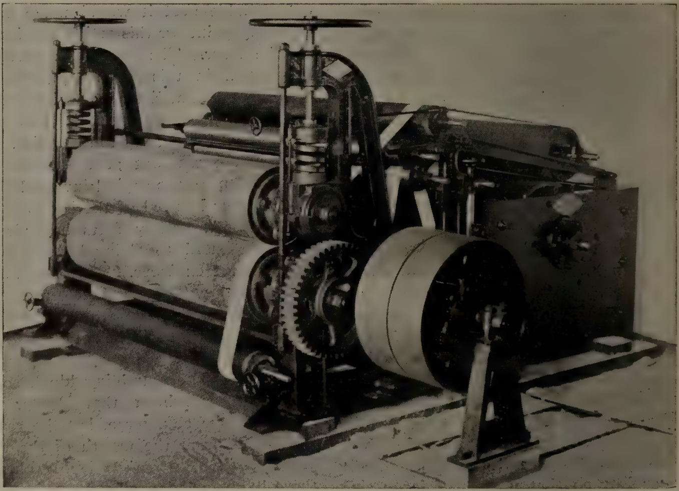

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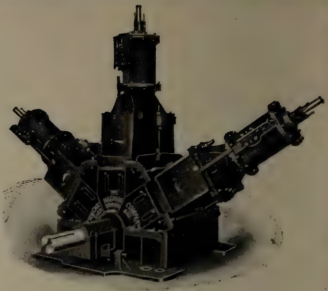

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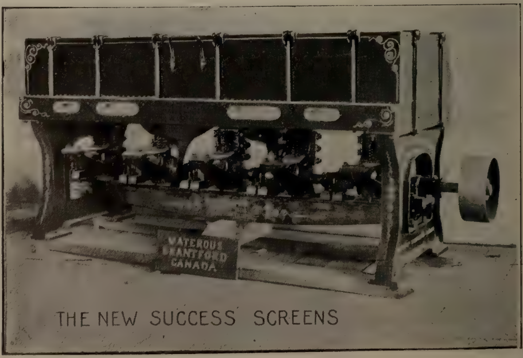

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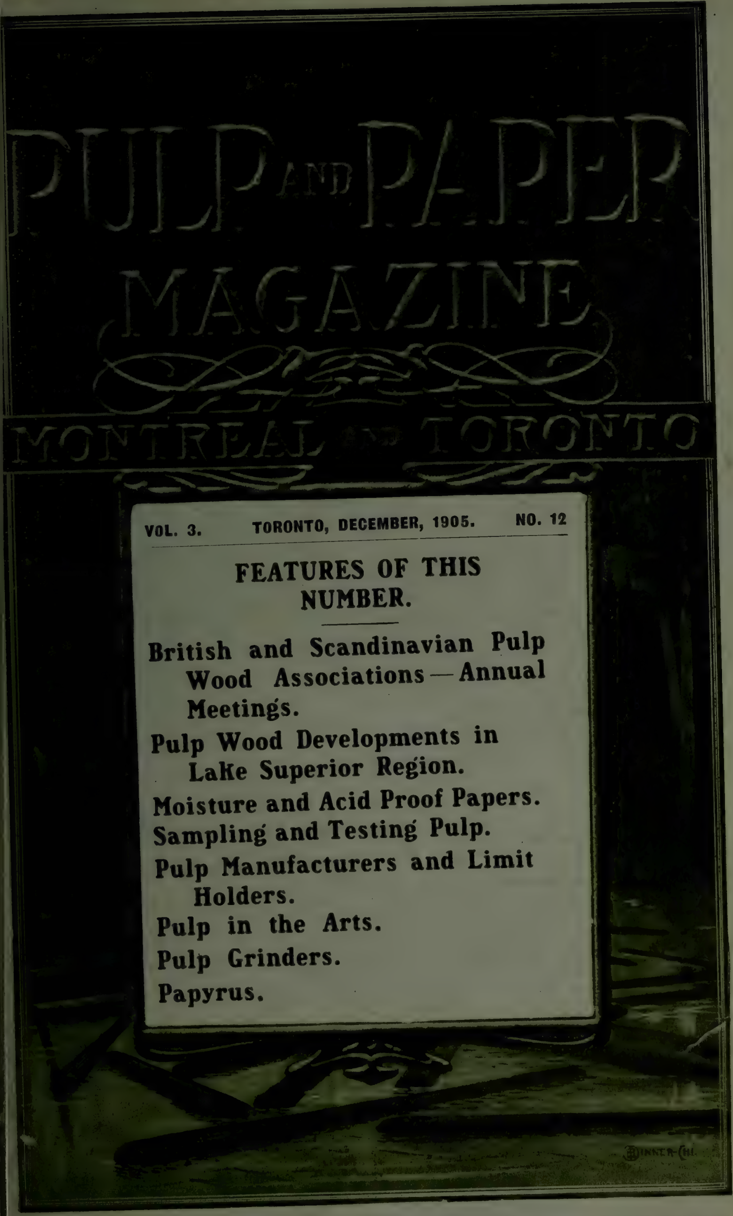

PULP AND PAPER MAGAZINE

MONTREAL AND TORONTO

VOL. 3. TORONTO, DECEMBER, 1905. NO. 12

FEATURES OF THIS NUMBER.

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- Pulp Wood Developments in Lake Superior Region.
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INDEX TO ADVERTISEMENTS.

Atterbury Bros. 41

Beloit Iron Works 47
Benson & Co., W. T. 10
Bentley & Jackson 4
Bertram's, Limited 6
Black-Clawson Co., The 7
Bredt & Co., F. 10
Brunner, Mond & Co., Limited 50

Canada Paper Co. 49
Canadian Fairbanks Co., Limited, The. 37
Canadian Rubber Co. of Montreal 8
Castle, Gottheil & Overton 9
Cheney-Bigelow Wire Works 38
Christie, J. 50
Christie, Limited, George 3
Cousland & Co., A. 10

Davis & Co., F. H. 42
DeCew, J. A. 9

Eastwood Wire Mfg. Co. 2
Emerson Mfg. Co. 37
Freese, Jean 3
Hamilton Mfg. Co., Wm. 39
Hardy, George F. 9
Hawksworth & Sons Co., Limited, Alfred. 12
Hay Knife Co., Limited, Peter 38
Hough, R. 50
Huyck & Sons, F. C. 5
International Pulp Co. 9
Jenckes Machine Co., Limited 12 & 48
Johnson & Sons, Limited, C. H. 6

Kenyon & Son, James 43
Klipstein & Co., A. 11
Kimball, Herbert S. 9
Knight & Co., John 45
Lea & Coffiin, and H. S. Ferguson 9
Little, Arthur D. 9
McDougall Caledonian Iron Works, The John 42
McOuat & Son, T. 39
Paton, Thomas L. 3
Perrin & Co., Ltd., Wm. R. 42
Porritt & Sons, Joseph 10
Porritt & Sons, Limited, Samuel 50
Porritt Bror. & Austin 6
Pringle & Son, T. 9
Pulp & Paper Trading Co., The. 38
Pusey & Jones Co. 40
Quebec & Lake St. John Ry. 8
Smith Co., S. Morgan 49
Sullivan & Co., C. F. 10
Union Screen Plate Co. 3
Union Sulphur Co., The. 43
Vogel, C. H. 9
Wallace-Jaastad-Drewson 50
Waterous Engine Works Co., Ltd 48
Wertheim & Co., A. 44
Whittaker, Richard 11
Wilson, Paterson & Co. 12
Winn & Holland 50
Wurster, Dr. C. 40
Young, J. S. 49

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—The Canadian post-office authorities have ruled out the use of transparent envelopes, which are a fad in the United States now as a cover for picture cards. The reason is that they cause too much trouble in sorting the mails, the addresses often being undecipherable unless the sorter takes time to flatten the transparent envelope down on the address.

—An article in the "British and Colonial Printer and Stationer" emphasizes the important place in latter-day publication which the ladies' fashion paper has taken. There seems to be no end to the multiplication of ladies' papers, and the amount of "news" and "printing" paper which they collectively consume must be enormous. There is another kind of paper also for the consumption of which ladies' journals are mainly responsible, and that is the thin, brown, tissue-like material out of which paper patterns for costume and dressmaking purposes, which are circulated in such large numbers with the journals and are so dear to the feminine mind, are cut. Much of the paper used by the ladies' journals for pattern-making is of Swedish manufacture, and the patterns are cut by means of band-saws, which, running at a great speed, cut some 500 thicknesses of paper at one operation.

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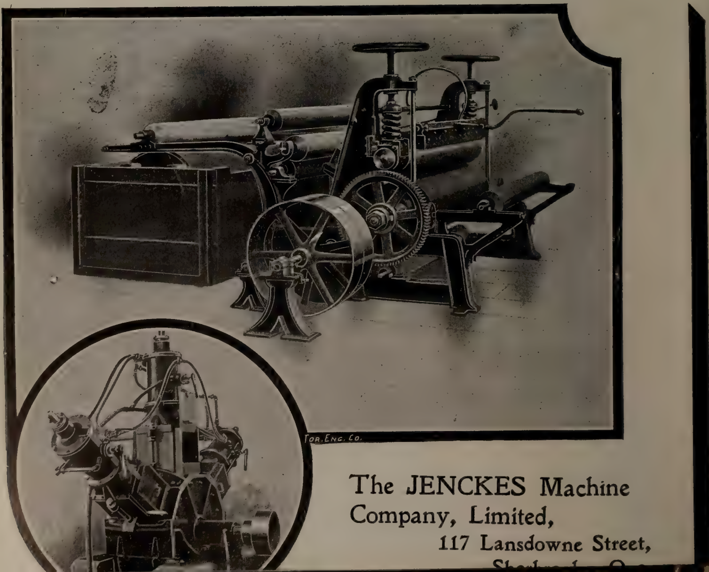

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OF CANADA

VOL. 3.—NO. 12. TORONTO, DECEMBER, 1905. $1 A YEAR. SINGLE COPY 10C.

Pulp and Paper Magazine

A monthly magazine devoted to the interests of Canadian pulp and paper manufacturers and the paper trade issued between the 15th and 20th of each month.

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PULP DEVELOPMENT IN THE LAKE SUPERIOR REGION.

Readers of The Pulp and Paper Magazine will remember that one of the last acts of the late Liberal Government in Ontario was to grant to the Grand Trunk Pacific Railway a cash subsidy of $2,000 per mile, and a land grant of 6,000 acres per mile for the construction of the Lake Superior branch of the road, some 200 miles in length. The plans of the location of the road were filed in May of this year, and according to the Act the company had a full year from date of filing to select its land.

The selection of this land has certain restrictions. If the company takes a given township as one parcel it must omit the next township and take the one immediately beyond it. It need not limit its parcel to the township size. It may take two townships, but not more than three, in one parcel. Whatever it takes in a given spot it must leave an equal area between that spot and the next selection it makes. In brief, the land is to be taken in alternate blocks of from one to three townships in extent. Each block must adjoin the railway and may extend back therefrom the full eighteen miles possible. That is to say, a belt of Crown Land 200 miles long and 36 miles wide, an area of 7,200 square miles, or 4,608,000 acres, is withheld from settlement until the railway company has made its choice of the best 400,000 acres. And the choice means a great deal, though the company is restricted to alternate blocks. Here it can take a single township adjoining the road where no large tract of good soil is to be had. There it can take three townships, all abreast of the road, running back three tiers, or in any of the possible arrangements, according as its sense of its own advantage prompts it.

The chief outcry, however, was not in debarring settlement for the given time, but in the impeding of the lumber interests, as it seemed evident from the Act no timber could be cut in this immense belt of land. Premier Whitney held that this effect of the Act would be unfair, and suggested a repeal of the Act in the interests of the Province.

To prevent such repeal the railway company quickly made a concession, and will allow timber permits to be issued in this thirty-six mile belt, but restricting the cut to such material as will be used for building the road. Applications for pulp wood concessions in this belt, in which large tracts of spruce forest stand, are, therefore, useless until the railway land is selected.

One redeeming feature of this large gift to the railway corporation is that none of the spruce timber on the lands so granted can be exported in an unmanufactured condition, but must be made into pulp, paper, or other finished or partially finished article of commerce within Canada. Another condition of the subsidy is that the company must place 400 settlers annually along its line for ten years.

Although the railway company's price for building the road is high for the Province, it is certain that within a short period the pulp and paper industry will be largely developed in this vast stretch of country.

MORE THAN A PULP PROBLEM.

The Pulp and Paper Magazine has maintained that the forestry problem is more than a pulp and paper manufacturing problem to the people of Canada; and hence it is not alone on the ground of pulp and paper trade interest that this journal pleads for the regulation of timber cutting. What has happened in Mesopotamia, in Greece and in Spain in converting fertile regions into deserts is now matter of history, but what is now happening in other regions to-day as the effect of the wholesale destruction of forests is capable of demonstration before the eyes of men of this generation. We would commend to our public men the following extract from an address before the German meteorological society by Dr. Henning. The fact that Dr. Henning understates the forest area of Canada will not invalidate his argument:—

"The interest in deforestation and forestry may be called general and public. Whether forests exercise a perceptible influence upon the climate is a very old question, and even to-day it is not definitely settled. In many countries a drying up of the climate has occurred, which is shown perhaps most strikingly in almost the whole of Africa. That deforesting has assumed constantly growing proportions in almost every part of the world is still more apparent. The climate of Greece, where to-day only 16 per cent. of the area is covered with forests, has deteriorated. An increase of temperature and decrease of rain are noted, compared with ancient times, especially in Attica, which was thickly covered with forests about three thousand years ago, and where hardly any rain now falls, while the heat in the open air attains a degree which would make the "Olympian games" almost an impossibility. A similar condition exists in the Peninsula of Sinai, where housands of years ago the people of Israel lived in a luxuriant and fertile country and where to-day only forestless deserts abound. Palmyra, also once a lourishing oasis in the Syrian desert, presents to-day only a desolate waste of stones and ruins. In Mexico, where the Spaniards cut down the forests in the mountains, droughts changing to devastating floods are now noticeable, especially in the vicinity of the City of Mexico. In upper Egypt, where only one hundred years ago rain was abundant, drought now usually prevails. In Algeria, where, since the middle of the last century, the forests have been cut down on a large scale, dry weather has increased, and in Venezuela the level of Lake Tacarigua, to which Alexander von Humboldt drew attention, has been lowered in consequence of deforestation.

"If these and other facts are kept in mind the sentence, 'Man traverses the earth and a desert results,' is understood. It must not be forgotten, however, that this applies mainly to the influence of civilization upon appearances and is not always due to climatic changes produced by deforesting. Some authorities even deny the influence of forests on the weather and climate. It can not be denied, however, that dense forests favor moisture and prevent the drying out of the soil to a considerable degree. At any rate, deforesting, which in modern times assumes constantly growing proportions for industrial and agricultural purposes, is of universal importance.

"Germany, with a forest area of about 26 per cent., realizes annually nearly $60,000,000 worth of timber therefrom, while the wood importations are about of the same value. The consumption of wood increases from year to year, and systematic forestry has not succeeded in keeping up the forest area of Germany. If it is furthermore borne in mind that Canada, which formerly possessed more than 300,000,000 acres of forests, has to-day only a forest area of about 225,000,000 acres, it becomes evident that the question of deforestation assumes great importance. If civilization continues to change the face of the earth the problem of its wood supply will present itself like that of coal and force the finding of a suitable substitute.

PAPER MANUFACTURERS' ASSOCIATION.

The Canadian paper and pulp manufacturers have taken a wise step in reorganizing themselves on a broader basis than that upon which the first association was formed. An association whose only bond was an agreement as to prices was sure to go to pieces when one or more of its members failed to give its complete adherence to that agreement. This, in fact, happened in the case of the late association; but at meetings held on the 1st and 9th inst., in Montreal, it was decided to reorganize as a section of the Canadian Manufacturers' Association. As the Pulp and Paper Manufacturers' Section of the C. M. A., the members will have the benefit of the machinery of the larger association for action when their interests are affected, and in this relationship they will be better equipped to take up the tariff question, and other matters, such as the pulp-wood problem. Their relations to the public can take on more of the educational character, for there is no doubt that the position of the pulp and paper manufacturer—more especially the latter—has been misunderstood in some important respects. These misconceptions can be cleared away by an association whose aims are related to the public policy of the country.

At the meeting in Montreal the tariff question was discussed, and a definite conclusion was reached that the minimum duty on paper imported into Canada ought to be 25 per cent., and on other goods manufactured from paper the duty should be 35 per cent. That is to say, that these duties should be the net duties under the preferential tariff and the duties on paper from other countries should be higher by the amount of the preference. Or, to put it more exactly, the duty on paper and on manufactures of paper (such as boxes, bags, pads, etc.) should be 25 per cent. and 35 per cent. respectively, after the British preference has been deducted. The duty on news paper is nominally 25 per cent., but under the tariff amendment following on the report of the Royal Commission of 1901 the rate was reduced to 15 per cent. if the value of the paper in the country of production was not more than 2¼ cents per pound. This reduced the net duty to 10 per cent. in case the paper was imported from Great Britain.

The question of the restrictions on pulp-wood and pulp exports to the United States was discussed, but opinion was divided as to whether any radical change would be made by the Government of Quebec. It is considered by many that the pulp and paper interests will have to look to the Dominion Government for any effective action in this matter.

TECHNICAL EDUCATION.

It must be evident to everyone connected with the pulp and paper trades of this country that one of the chief drawbacks to the rapid development of these industries is the lack of technical education. At the present time companies engaged in these lines of manufacture have to go abroad to secure experienced men. This is no fault of the younger Canadians, who in all other fields in which they have been properly educated have shown that they are the equals, and in many cases the superiors, of both English and Americans. The fact is that in these particular industries they have not been brought up in a technical atmosphere. If Canada is to take a foremost place in paper and textile manufacturing, proper technical education suitable to these industries is essential. In the great paper and textile centres of Great Britain, Germany and the United States, particularly the New England States, schools for instruction in paper-making and textile manufacturing have been established, and are doing a work which is telling in superior quality and increased output.

Wherever technical education has been advanced in Canada there has been a corresponding advance in the particular industries affected. Each year finds an increased number of students in the engineering courses at our leading universities, and each year there is an increased demand for the graduates of these institutions. Technical education in Canada is an immense success as far as it goes, but it does not go far enough. The best results and a rapid growth in the paper making and textile trades cannot be expected without some measure of technical education, whether it be state aided, or by private enterprise.

In the November number of The Pulp and Paper Magazine reference was made to the satisfactory test of Canadian pulp-wood in Norway. The test showed Canadian pulp-wood equal to good Norwegian, and with proper facilities Canada should be a close competitor with Scandinavia in the British market. Undoubtedly some of the Canadian product is inferior, and this emphasizes the need of education, and a study of the methods used in Norway, Sweden and Germany. Such information can only be obtained by the inauguration of a system of technical education.

⁂

Pulp & Paper Currency

The description, in another part of this issue, of a plant for a water proof and acid proof paper recalls the reputation possessed by certain papers of Italian make for water resisting purposes. An ordinary tub-sized rag paper, composed of two-thirds cotton and one-third linen rags, and weighing 30 lbs. to the ream shows a machine strength of 60 lbs. to the inch of width and nearly 37 lbs. per inch in cross strength. The same paper, when thoroughly moistened for five minutes, shows a loss of over 87 per cent. of its strength. That is, it has only one-eighth of its dry strength, and if the paper were soaked all night by the dew, even this eighth would largely disappear. The special papers made around Como, Italy, retain two-thirds of their strength under the same tests. This paper is colored a fast black, and according to Paper and Pulp, is produced in the district of Cernobbio, on the Lake of Como, which district for a region of more than 400 years, has made itself noted for its paper. In a comparatively dry climate this black wrapping paper is actually stronger when wetted than when exposed to the dry atmosphere. In addition to its waterproof qualities, it is also grease-proof. Zinc linings for hermetically sealing are frequently used for export and shipment of such goods as are affected by the atmosphere, notably paper. Such linings are very expensive. The black wrapping paper is so excellent in its waterproof qualities as to make it possible to do away with such expensive linings. It appears to stand every possible range of climate without undergoing deterioration. When moistened with water on one side only its resistance is said to be increased. There would seem to be scope here for an enterprising Canadian manufacturer to produce a moisture-proof paper which would sell abroad as well as at home. A sample of this paper can be seen at the office of The Pulp and Paper Magazine.

⁂

The remarkable finds of cobalt-silver ore in North Ontario have a distinct interest for the paper and textile trades, because cobalt is a mineral that furnishes a blue coloring matter that can be used in both paper coloring and the dyeing of textile fabrics. At present cobalt is almost wholly used for giving to porcelain the peculiar cobalt blue which cannot be matched by any other coloring matters. The reason it has been used only experimentally in the paper trades is that it has not been produced in quantities sufficient to make it applicable on a commercial scale. We understand that 65 cents a pound is now paid in the Cobalt district of New Ontario—only a fraction of the prices hitherto ruling in Europe, and it will soon be mined in such quantities that it can be brought into use extensively in both paper and textile manufacturing.

✻

The notion that Australia is altogether a treeless land is not correct. A belt on the eastern coast, nearly 2,000 miles long, is endowed with immense forests, and although the general characteristics of Australian woods are closeness of grain and compact texture and heaviness, it is suggested by a correspondent of the "World's Paper Trade Review" that a variety known as the hoop pine may be used for pulp. The subject has been discussed by government officials, but no experiments on a commercial scale have yet been made. It is a question, however, whether Australia has sufficient water powers of a permanent character to make pulp manufacturing profitable.

✻

RE-MANUFACTURE OF WASTE PAPER.

The re-manufacture of waste paper has assumed enormous proportions in the States, especially in New England. After a preliminary sorting and dusting, the paper is boiled with sodium carbonate solution. This treatment is distinctly better than those in which soap solutions, ready formed, are employed, since a direct reaction takes place between the soda and the saponifiable constituents of the printing ink. The lamp-black is thus set free and becomes incorporated with the soap solution at the moment of saponification. Thus emulsified, the carbon is easily removed in the subsequent washing process. The pulp is then bleached, and a fine, white "stuff" containing 8 to 10 per cent. of ash and possessing excellent paper-making properties results. This material is mixed with a small percentage of wood cellulose and the desired amount of loading. It runs on the machine with extreme ease, and, considering its strength at a high speed. The resulting paper possesses exceptional opacity and elasticity—properties which assure for it a large demand amongst the printers. Samples of this paper compared by the writer with paper prepared from new materials (poplar pulp) were pronounced to be better than the latter, both on account of the properties mentioned above and on account of its structure and surface. A number of the American magazines are printed on re-manufactured paper, and to this fact their superiority is largely attributable.

✻

In the face of keen foreign competition Canadian paper is finding its way into the Australian market. Lloyds, Limited, of London, England, have contracted to take part of the production of the Western Canada Pulp & Paper Company of British Columbia. A representative of Lloyds who has just returned from Australia states that there is a growing demand for Canadian paper, and that if the mills of the British Columbia company are proceeded with shipments will be made direct to Australia and New Zealand.

✻

Pergamum was a city noted both for its splendor and its wickedness—"where Satan dwelleth" (Rev. 21:3); of special interest to librarians and book lovers, since it was here that Antony found the library of two hundred thousand volumes which he removed to Egypt and presented to Cleopatra, and also because it was here that parchment was first made, the city giving its name to the new product (pergamena, or parchment).

British Wood Pulp Association.

The ninth annual meeting of the British Wood Pulp Association was held in London on the 30th ult. J. Y. Henderson, vice-president, in the absence of the president, being in the chair. It was reported that the Association had now taken offices in the Chamber of Commerce Building, Oxford Court, Cannon Street.

A list of subscriptions was reported towards a memorial in honor of the late C. D. Ekman for his services in the invention and development of the sulphite pulp process.

The following is a synopsis of the proceedings condensed from the "World's Paper Trade Review."

Sampling and Testing.

A conference on this subject took place on May 15th last, under the presidency of L. P. Andrews. As the other Associations represented could not agree to the delegates having plenary powers, it was decided to withdraw this right from the delegates. There were present at the conference: Dr. G. Schibbye, of Skien Sulfitfabrik, representing the Scandinavian Cellulose Associations; Alfred Bommen, of Viul Traesliberi, Christiania, representing the Scandinavian Wood Pulp Associations; Joseph Dixon, of P. Dixon & Son, Oughtibridge, and C. R. Seddon, of the East Lancashire Paper Mill Co., Ltd., Radcliffe, representing the Papermakers' Association; L. P. Andrews, of Andrews & Co., Ltd., London, and F. Becker, of Becker & Co., London, representing the British Wood Pulp Association; and the secretaries of the Papermakers' and British Wood Pulp Associations.

The chairman explained that the purpose was to consider the present methods of sampling and testing wood pulp, and, if possible, to adopt a uniform method. It appeared that the Scandinavian Associations and the British Wood Pulp Association were dissatisfied with the present methods of sampling and testing, while the representatives of the Papermakers' Association expressed their belief that the "wedge" method of sampling gave fair results to all parties. Mr. Becker gave particulars of a number of tests to prove that the methods at present in use, including the "wedge" system, were unreliable, and that even the same chemist could not get identical results in two tests of the same parcel under the same conditions. Mr. Bommen described the methods in use at his mill to control the moisture, and the different results obtained from some tests at buyers' mills. He thought that when pulp was freshly packed, the "wedge" method took too much of the wettest part of the sheet and, that owing to the way sheets of moist mechanical pulp were folded and pressed, there was often a difference in moisture between the outer and inner parts of the sheet.

After discussion it was decided that ten bales of wet pulp, five from English paper mills and five from Scandinavian pulp mills, should be sent to the Manchester Chamber of Commerce Testing House, and that five analysts should be asked to simultaneously sample and test these bales in the presence of any members of the Joint Committee able to be present, by their ordinary methods and by other methods suggested to them by the Committee, each bale to be separately tested and their reports to describe fully their methods of sampling and testing. Each whole bale then to be bone-dried. The reports of the various analysts to be addressed to "The Joint Committee of Sampling and Testing Pulp," care of The Secretary of the Papermakers' Association, 35 Queen Victoria Street, E.C., and to be lodged with him before the results of the whole bale test are known. The reports to be opened in the presence of representatives of the Papermakers' and British Wood Pulp Association, and also of the Scandinavian Pulp Association if they desire to be present, the cost of this test to be borne by the Associations represented in the Joint Committee.

Mr. Bommen desired that some bales three or four months old should be tested in order to obtain information as to variations through age, such bales to be preferably stored under different conditions, but nothing was decided with regard to this suggestion. It has not yet been found possible to summon a second meeting of the delegates, but your committee is sure that the matter will receive due attention from these gentlemen.

Contract Note.—During the past year several questions regarding the interpretation of various conditions of the Contract Note have arisen, and your Committee is of opinion that several clauses require revision, and suggests that it be an instruction from the General Meeting to the new Committee to give this matter consideration. The following are among the principal points referred to your Committee:—

(a) **Clause 3** (Sampling and Testing).—There seems to be some doubt in connection with this Clause as to who is responsible for the analyst's fee when the difference does not exceed 0.5 per cent. The Committee holds that the party who called for the tests is liable, but the Clause might be made clearer on this point.

(b) **Clause 5** (force majeure). — A case was laid before your Committee for its opinion as to the correct interpretation of the following portion of Clause 5, i.e.:—

"And in the case of deliveries spread over periods of time, they shall, when resumed, be made at the same rate as provided in this contract," etc.

The case was as follows:—The buyer had a contract spread over 1904, and during the latter part of that year, the mill's production was curtailed owing to scarcity of water and, consequently, deliveries dropped behind. At the commencement of 1905 the mill was a good deal behind. The seller then claimed that he was within his right in beginning delivery of the 1905 contract before completing the 1904 contract. The buyer, on the other hand, was of opinion that he was entitled to claim delivery on the 1904 at the same rate as provided in the contract, before the seller had any right to make deliveries on the 1905 contract, the former having been entered into in July, 1903.

Your Committee replied to this that while the majority of its members were in agreement with the buyer on the point raised, it had received information that a similar case had been submitted to two independent counsel, who advised that deliveries on both old and new contracts should be made pro rata. If the old contract had entire preference over the new, it presupposes that deliveries on the new contract could not be made until the old contract was completed, and counsel held that no judge would allow this, as it would be in restriction of trade.

Your Committee, however, is of opinion that this matter is worthy of further consideration, as it is evident the clause as it stands is ambiguous.

Your Committee has been informed that the clause was discussed at a meeting of the Scandinavian Cellulose Union, when it was stated that several of the members sold in Great Britain on the terms of the old force majeure clause, viz.: that in the case of total destruction by fire the contract should be null and void.

(c) **Clause 8** (Claims).—It has been pointed out to your Committee, that the French Contract Note is very distinct with regard to the rights of sellers and the obligations of buyers as to payment in cases of claims, and it is suggested that this should be borne in mind in the case of a revision of the Contract Note. The reference is embodied in the Arbitration Clause, and reads as follows:—

"If a claim shall arise in connection with the execution of the contract, the buyers shall not have the right of refusing to take delivery of the goods either wholly or in part, nor of refusing to give acceptance, or to pay according to the clauses of the contract, but the claim, in case it cannot be arranged otherwise, should be submitted to arbitration," etc.

(d) **Clause** 7 (Default or Bankruptcy).—Your Committee's attention has been drawn to the fact that this clause is unfortunately expressed in connection with companies, as technically bankruptcy laws do not apply to companies at all. The Committee took legal advice and the following amendment was suggested:—"If the buyers make default in any payment, or become subject to the bankruptcy laws, or, being a joint-stock company (whether constituted under British or foreign laws), become insolvent, or go into liquidation, or have a receiver appointed at the instance of debenture holders or other creditors, the sellers may, at their option, refuse to make further deliveries."

Warehousing Pulp at Manchester Docks.—The following correspondence is self-explanatory, and Mr. Wettre's reply has been endorsed by your committee:—

The Manchester Ship Canal Company.

Manchester, May 18th, 1905.

Dear Sirs:

Referring to the company's circular issued on the 2nd May, 1904, respecting the warehousing of wood-pulp at the Manchester docks; I beg to inform you that the arrangement therein set out will be continued for a further period of twelve months from the 2nd inst. The company trust that this will lead to still further importations of wood-pulp to Manchester.

The following is the arrangement referred to, viz.:

> "The Company have decided that for twelve months from this date, (May 2nd, 1904—which now please read as May 2nd, 1905)—they will in respect to wood-pulp to be warehoused at the Manchester docks, and in lieu of their present charge of 1s. 6d. per ton for warehousing plus 9d. per ton for quay porterage—when incurred— only charge a rate of 1s. 6d. per ton, which will include warehousing and re-delivery to railway wagon or cart (for re-delivery to barge when not alongside, 6d. per ton extra) provided warehousing instructions and the necessary documents are lodged with the company twenty-four hours before the vessel's arrival at the docks.
>
> "Subject to this condition being complied with by the importer, the canal company will take the risk of the quay porterage being incurred before warehousing is performed.
>
> "The warehousing charge of 1s. 6d. per ton and rent at 1½d. per ton per week from time of discharge of the pulp, will be collected from the importers in respect of all such pulp, whether it is subsequently delivered from the quay or warehouse."

Yours truly,

E. LATIMER,

General Superintendent.

To the British Wood Pulp Association.

Copy of letter from Manchester Ship Canal Company to its London agent, Mr. McConechy, dated May 17th, 1905.

Referring to your letter of 15th of April, 1904, in regard to the above, you will remember we agreed to take the risk of the quay porterage being incurred on pulp to be warehoused if instructions were given us before the ship's arrival, for a period of twelve months which has just expired, and you will see from the enclosed circular letter that we have decided to extend the arrangement for a further period of twelve months, which we do in spite of the fact that during the twelve months just ended, the increase for that year has only been 500 tons, whereas actually in pulp from the Baltic there has been a decrease of about 8,000 tons, so you will see this is not very encouraging, and we would be glad if you would see the members of the special sub-committee of the British Wood Pulp Association, and bring out to them that our port is not being supported as well as we thought it would be by increased shipments in consequence of the sacrifice we have made. You will remember that you informed us that Mr. Wettre had little doubt that there would be a substantial improvement in the shipments to Manchester, but you will see that this has not been the case, and perhaps you would go into the matter fully as to the reason of this.

(Sgd.) HERBERT M. GIBSON,

Chief Traffic Superintendent, P.W.J.

In consequence of an interview with Mr. McConechy the following reply was sent:—

London, May 23rd, 1905.

J. S. McConechy, Esq.,
London, E. C.,

Dear Sir.

I beg to return enclosed the letter addressed to you by the Manchester Ship Canal Company, of the 17th inst. According to same, they stored 500 tons more of wood-pulp during the last twelve months than during the preceding period, whilst the imports from the Baltic went down by about 8,000 tons. The latter item, as you will know, can have no direct connection with the Ship Canal Company's rates for warehousing, but must be ascribed to causes of an entirely different nature, as perhaps the imports from Canada to Manchester may be so much larger, or should it be that Preston has been able to offer greater facilities, and therefore secured more of this through traffic.

As your people do not state the quantity they took into warehouse during the preceding year, I do not know what percentage of increase the 500 tons during the last year represents, but cannot help thinking the increase a satisfactory one, and for three very special reasons, viz., (1) the company made the reduction in the warehouse charges rather late in the season, viz., May 2nd, 1904, when most of the shipping arrangements had been made for last year, and, of course, had been made in accordance with your previous higher rates; (2) During the whole of last year, and up till a week or two ago, serious drought curtailed the production in Scandinavia to a considerable extent, affecting more especially wet pulp, so that consumers on this side wanted the pulp directly it was made, and there was scarcely any necessity for storing it in Manchester. (3) In the dry chemical pulp trade a period of scarcity also commenced last year, and is still going on, the effects being exactly the same as just described for moist pulp. In a word, the position of wood-pulp for the last twelve months has been quite an abnormal one, so it is only to be wondered at that the quantities warehoused by the Ship Canal Company have actually increased instead of decreasing.

In conclusion I would point out that the Canal Company's charges are still higher than the charges at Preston, where rent commences only after the expiration of the first four weeks, meaning an advantage to importers of 6d. per ton; besides warehousing and re-delivery costs in Preston only 1s. per ton, as compared with the Manchester rate of 1s. 6d.. If, therefore, the Ship Canal Company are anxious to attract this traffic, we suggest that they should come down to the Preston rates, and what Preston can do they ought to be able to do.

Yours faithfully,
(Sg'd.) RAGNAR WETTRE.

Railway Carriage on Bill of Lading or Actual Weight.—It has been the custom of the trade to pay carriage on bill of lading weight, but a case was submitted to your Committee as to whether it was advisable to do this in exceptional circumstances. In the case in question it was found that in a parcel of mechanical pulp, the bill of lading weight of which was 658 tons, 33 tons of water had been lost by evaporation and railway carriage was paid on the Bill of Lading weight. Your Committee, however, is of opinion that railway companies generally act in a fairly satisfactory way with regard to such matters, and that it is inadvisable to attempt to alter the present state of affairs.

Packing Pulp.—The Papermakers' Association submitted to your Committee a resolution to the effect that it was desirable to stop the practice of putting sheets of an inferior grade at the top and bottom of bales, owing to their liability to cause damage and loss to the papermaker by getting mixed with the rest of the bale. To this your committee replied that, as the practice in question was not general, it should be taken up between buyer and seller in cases in which it is objected to, as some mills preferred to have the inner pulp well protected.

In discussing the report Mr. Andrews mentioned that four out of the six resignations came from Canadian members.

It was decided to refer the contract note question back to the committee as the present note did not suit the views of the association.

It was decided to continue the subscription to the funds of the Decimal Association, and the hope was expressed that the metric system of weights and measures would soon be adopted in Great Britain.

Election of Officers.

Capt. Edward Partington was re-elected president.

Frank Lloyd, A. E. Reed, C. T. Owen, W. G. Taylor, C. T. Craig, L. P. Andrews, Harry B. Wood, and J. Y. Henderson and J. A. Nordberg vice-presidents. They all knew that last year Mr. Becker resigned the honorary secretaryship and a vote of thanks was accorded him for his services, which he well deserved. He now begged to move that the names of Mr. Becker and Mr. Nordberg be added to the vice-presidents.

W. J. Walter, Manchester, was re-elected hon.-secretary and D'Oyley Mears, hon.-treasurer.

Mr. Becker declined nomination.

Capt. Partington was prevented by illness from attending the meeting.

* * *

Pulp Grinder.

Bernhard Kihlgren, a native of Sweden, but now of Holyoke, Mass., has been granted a U. S. patent on a pulp grinder.

Fig. 1 is a side elevation, with important parts in central vertical section, of a wood pulp grinding machine, comprising two primary cylinders with working piston therein and one secondary cylinder and working piston. Figs. 2 and 3 are sectional views, on a larger scale, of the transfer valves shown in their different positions relatively to several conduits having their functions at such valve.

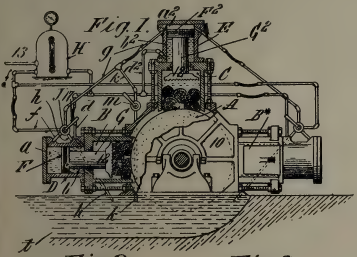


Fig. 1.

Fig. 2.

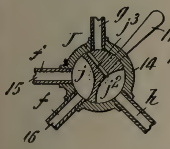
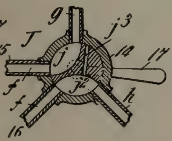


Fig. 3.



A represents a rotary pulp-wood grinding wheel enclosed within a suitable casing 10. Adjacent to the grinding wheel is a primary chambered casing B for pulp wood opening endwise to the grinding wheel and C represents a secondary pulp-wood chamber, shown as having a location similarly adjacent to the grinding wheel, but in a different radial line from the chamber B. The intent is that wood in the chamber B shall be ground with as great continuity as possible, and with only intervals of non-working as are occasioned for the replenishment of the wood supply therein, while the wood disposed of in the secondary chamber C is in accordance with the capability of this machine to have pressure exerted thereagainst, forcing it to the grinding wheel only at such time as the pressure means conjunctive to the primary chamber B is retired and passive, or where there is a plurality of the primary chambers at the time when the pressure means for one or another of the primary chambers is retired and passive.

In the machine, shown as organized, two of the primary pulp wood chambers B and B* are provided with cylinders, pistons, conduits and valves.

Adjoined to and in longitudinal continuation of the chambered pulp wood casing B and C are the primary and secondary cylinders D and E, having pistons F and F_2, respectively, therein with piston shafts or bars G and G_2, which extend through the inner end wall or partition of each cylinder and constitute with the enlargements 12 the followers for the pulp-wood.

By reason of the considerable bulk or cross-sectional size of the piston bars G G_2, one of the chambers in each cylinder D and E, divided from the other chamber in each cylinder, is of materially lessened cross-sectional area, and thereby the pressure fluid in communication at one time from the same source of pressure supply will be effective in the cylinder chamber *a* to overpower the opposing pressure in the chamber *b* in the same cylinder, the pressure likewise in chamber a_2 being effective normally to overpower the pressure in chamber b_2 of the cylinder E.

The chambers *a* and a_2 may be properly regarded as working chambers, while those *b* and b_2 have the functions of retracting or piston-retiring chambers.

The source of pressure supply is represented as a reservoir H, understood as having a water supply inlet 13, and in which a volume of air is maintained at an ample pressure within the upper portion of the reservoir and above the water therein. The pipe *d* runs from connection with the fluid pressure supply H to the retracting chamber *b* of cylinder B, and by a branch d_2 thereof like connection is established with the retracting chamber b_2 in the cylinder E. A pipe *f* leads from connection with the reservoir H to the working chamber *a* of the primary cylinder D. A pipe *g*, branching from the conduit *f*, leads into the working chamber a_2 of the secondary cylinder E and adjacent the junction of the conduit F and pipe *g*, and there connected by a valve-inclosing fitting 14 is a waste pipe *h*. Within the fitting connecting the three pipes—that is, *g*, *h*, and the two angularly disposed sections 15 and 16 of the conduit *f*—is the cock J, having the handle 17 for operating it, and having in the plug or body thereof the ways *j* and j_2, and so arranged that open communication may be established from the pressure supply H to working chamber *a*, the pipe branch *g* being out of connection with the pressure supply, as represented in Fig. 2, or that by shifted position of the valve J, the sections 15 and 16 of the conduit *f* will be closed one from the other, the pipe section 15 being in open communication with the branch *g* to give fluid pressure into the working chamber a_2 of the secondary cylinder simultaneously with the making of connection between the section 16 of conduit *f* and the waste pipe *h*.

A pipe *k* is shown as having a branch connecting from the pipe *g* for waste, here shown as discharging into the pulp channel or canal *t* and having a shut-off cock *m*.

In operation, the pulp-wood chamber B being charged with the wood billets to be reduced to pulp, the secondary chamber C being likewise charged, the cock *m* will be closed and the cock J placed in the position represented in Fig. 2, whereupon the pressure fluid supply will have power access from the reservoir into the primary cylinder working chamber to overpower the opposing pressure exerted constantly from the same source of supply at the other side of the piston F in the chamber *b*, and the communication or pressure in the working chamber a_2 of the secondary cylinder will be suspended. When the wood supply in the casing B has been reduced and requires replenishment, the valve J will be shifted to the position shown in Fig. 3, whereupon pressure in chamber *a* becomes terminated, the pressure constantly maintained in chamber *b* becomes efficient to retire the piston F and the follower G

12 to the leftward, and the drainage-way is open from working chamber *a* to the relief or waste pipe *h*, and simultaneously with these conditions and actions, the fluid-pressure has access from the reservoir by way of conduit section 15, valveway *j*, and pipe *g* into the working chamber *a* of the secondary cylinder to secure the forcing downward of the follower G_2, 12 for the accomplishment of grinding of the wood in casing C, which grinding will continue while pulp-wood chamber B is being replenished, and then when the valve J is shifted back to the position of Fig. 2 the grinding of the wood in casing B will be resumed, and the grinding action in casing C will be substantially discontinued. In order, however, that so soon as the valve J is shifted from the postion of Fig. 3 to that of Fig. 2 there will be an instant of open communication between the working chamber a_2 of the secondary cylinder E and the waste pipe *h* by way of the pipe *g* to slightly relieve the pressure on the follower of the piston F_2, the cock J is shown as having in addition to the ways *j* and j_2 the third somewhat restricted way j_3, which during the shifting or transitory movement of the cock opens communication between pipe *g* and waste pipe *h*. In this way there is a slight letting up of the follower head 12 of the piston shaft G_2 sufficient to compensate for the elasticity of the wood in the casing C, and so that when the wood-forcing motor comprised in the parts D and B resumes its work, such resumption may be accomplished without shock or violence in the machine.

Of course there will be times when the piston F_2 in the secondary cylinder must be fully retired, correspondingly fully withdrawing the follower head for taking a new supply of pulp-wood into the secondary chamber C, and this may be performed by setting the cock J over to the position of Fig. 2 and opening the shut-off cock *m* in the drainage branch pipe *k*, whereupon, as manifest, a discharge way is established for withdrawal of the fluid from the working chamber a_2 and the constantly maintained fluid pressure in the retracting chamber b_2 becomes efficient for the retirement of the piston F_2 and its follower.

* * *

Germany's Paper Trade.

In the October number some notes on the progress of the paper trade of Germany were given from the report of Sir W. Ward, the British consul-general in that empire. The following are further extracts from the same report:

Germany, says Sir W. Ward, is at present, next to the United States of America, the most important paper producing country of the world, and the United Kingdom ranks only after Germany in this respect. On the other hand, the production of the United States is about two or three times as great as that of this country. The manufacture of paper and paste board is carried on in all parts of the German empire, but the most important centres are situated in districts where the chief raw material, viz., wood, is near at hand, or where water power can be easily utilized; thus the largest number of paper mills are to be found in Thuringia, the Hartz Mountains, Silesia and other mountainous regions. The manufacture of articles made of paper or paste board, such as boxes, toys, etc., is carried on chiefly in large towns, but a certain proportion of this industry is to be met with also in small places in the poorer districts of Germany have articles of this kind are made by workers in their own homes.

According to reports compiled by the "German Paper Manufacturers' Journal," there were, in 1904, 1,873 establishments for sorting rags, straw cellulose factories, paper and paste board mills, wood-grinding mills and cellulose factories, giving employment to 73,635 workpeople, while the wages earned amounted to £2,996,715. Compared with the previous year an increase is shown of four in the number of establishments, an increase of 1,587 in the number of workpeople, and an increase in the wages earned of £299,878.

The number of mills employed exclusively in the manufacture of paper in 1904 was 478, with 43,599 workpeople, while the wages bill represented £1,639,327. Compared with the previous year the mills show an increase of four, workpeople an increase of 1,436, and the wages earned an increase of £91,892.

The mills employed exclusively in the manufacture of paste board numbered 443 in 1904, giving employment to 7,996 workpeople, whose wages amounted to £262,565. Compared with the year 1903 a decrease of three is shown in the number of mills, and a decrease of 104 in the number of workpeople, but the wages earned show an increase of £4,959.

There are no official statistics available for obtaining the exact figures of the annual quantity of all kinds of paper and paste board produced in Germany nor (in consequence) of the exact rate of increase in the annual production during recent years. Evidence, however, is not wanting of the remarkable rate at which the paper production has been increasing, and this is furnished by a memorandum from the Prussian railway authorities concerning the development of the receipts for goods carried by the railways in Germany. It appears from this memorandum that the quantities of paper and paste board carried by the Prussian lines during the period from 1885 to 1903 increased 289 per cent., that is to say, on an average, 16 per cent. per annum. It is shown further than the total quantity of paper and paste board carried (including the quantities destined for export) amounted to 942,344 tons. To these figures should be added the quantities carried also by German inland waterways, which are estimated at about 100,000 tons. Allowing for the quantities of paper and paste board imported to Germany from foreign countries, which altogether amounted in 1904 to about 95,000 tons, it may—according to the estimate of the "German Paper Manufacturers' Journal"—be thus concluded that the total paper and paste board productions of Germany in the year 1904 must have been at least 1,000,000 tons.

The report contains an extract from the German Export Review which estimates that the total paper and paste board production of the world during the past year is about 7,000,000. It is stated that this total is made up of the various descriptions of paper, etc., in the following proportions, viz.:

	Per Cent.
Ordinary printing paper	31.50
Covers for documents and pack-paper	16.50
Brown wood paper and paste board	10.00
Whitey-brown paper, and paste board for roofing	8.00
Superior and ordinary writing paper	7.00
Superior printing paper (without wood)	6.25
Straw paper and straw board ..	5.00
Inferior writing paper	3.00
Handbill and prospectus paper...	3.00
Wall paper	3.00
Drawing Paper	0.60
Tissue, cigarette and flower paper	0.50
Blotting and filtering paper ..	0.40
Superior paste boards	0.25
Other kinds of paper and paste board	5.00

The most important branch of the paper industry of Germany is the manufacture of news paper in rolls. In the year 1900 a cartel was formed by twenty-nine of the most important German mills producing exclusively printing papers for newspapers, with a view to controlling this branch of the paper industry. The principles upon which this cartel was formed were firstly to regulate the amount of annual output; secondly, to fix the prices proportionate to the costs of production, while at the same time—whenever a falling-off sets in as regards the home demand and production cannot be restricted—to export the surplus output to foreign markets. The price at which printing paper is offered for export under such conditions is as a rule from 10 to 15 per cent. less than the home trade price. When the wholesale export dealer at Hamburg, for instance, gets for 19 or 20 pf. (per kilo) what is sold at 22 or 23 pf. in the home trade. The present export price of (news paper) printing paper at Hamburg is 20 marks per 100 kilos (or 20 pf. per kilo); until quite recently tht price stood at 21 marks per 100 kilos, but it has now fallen. The proportion of (news paper) printing paper sold for export by the German paper cartel in the year 1902 was 81,500 quintals, that is to say, about 10 per cent. of the total output of the mills belonging to the combine, which in that year amounted altogether to 800,400 quintals. The aggregate sales of German (news paper) printing paper at home and abroad both by mills belonging to the paper cartel were in the same year 1,490,500 quintals. The German (news paper) print-paper cartel, which was concluded in 1900 for a term of five years, has recently been renewed for another five years and has been joined by eight more printing paper mills; so that the total number of mills belonging to it is now 37, and only very few remain outside of the cartel. Most of the mills belonging to the cartel intend, it is stated, to set up new machinery; and they will, from and after the year 1907, thus be able to produce annually 190,000 tons (of 1,000 kilos) of printing paper altogether.

In concluding his report the consul-general says:

"Competent authorities are of opinion that one of the causes which has contributed toward raising the quality of German paper, and in consequence towards extending its production, and sale in such a remarkable manner, has been the establishment of the well-known official paper testing institute at Gross Lichterfelde, near Berlin. This institute was started in the year 1886 with the object at first of merely testing all paper furnished to the Prussian Government offices; but it was, after a short time of its existence, used also by dealers and private persons of other descriptions (both residing in Germany itself and frequently also in foreign countries) who wished to have their paper tested according to the rules laid down by this institute. The testing at Gross Lichterfelde is with a view to ascertaining the composition, sizing, color and amount of moisture in the paper, and whether it contains many impurities; and also the size, thickness, weight, consistency, toughness, resistance against and power of absorption of moisture, and permeability in regard to light of the paper. On the part of the German paper manufacturers a strong opposition was at first raised against the establishment of this paper testing institute, but in course of time this opposition has disappeared, and it is acknowledged now also by them that it has had a most beneficial effect for the interests of the German paper industry."

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The E. B. Eddy Company recently purchased an auto truck for use around their mills at Hull. The truck can be heavily loaded. On a recent delivery three tons of paper were taken from the mills to the Ottawa "Journal" office in ten minutes.

Water-Proof, Grease-Proof, and Acid-Proof Paper.

A patent has just been taken out in the United States for a process which it is claimed, will give a paper that is water-proof, grease-proof and acid-proof. The inventor is Charles Ignatius Goessmann, of Worcester, Mass., assignor to Vellumoid Paper Company, of Amherst, Mass. The inventor claims that besides the qualities mentioned, his paper has great strength; is a non-conductor of electricity; and is suitable for packing joints in pipes and connections.

In carrying out his process the treatment may be applied while the pulp is being formed into paper, or the finished paper may be treated. If the material is to be treated while being formed into paper, then the better method is to begin the treatment when the web of pulpy material leaves the Fourdrinier wire or the cylinders, it then being in a damp condition, but with the larger percentage of moisture removed. From this point the treatment of the paper is the same, whether it be pulp in a sheet, as above stated, or finished paper.

The treatment consists, first, in saturating the paper with glutinous material, preferably animal glue, and by preference the bath of glutinous material should be hot, to effect the more rapid absorption and more perfect permeation, and deposit of the glutinous material within all the interstices throughout the body of the paper. By preference a suitable tank is provided in which the glutinous material is deposited and in which it may be kept heated to a constant temperature, the paper being passed through the tank and saturated during its passage. The material being treated should pass in a continuous sheet—that is, be fed from a roll and the finished product be wound in a roll after final treatment. This saves time and the requisite incorporation of glutinous matter in the fibre will with some papers—for instance, lightly-sized manila hemp—require but a few seconds. As the paper passes from the glutin-tank the surplus of glutinous matter is removed from the surface by mechanical means as contra-distinguished from simply allowing it to pass off by gravity, and in most instances the paper is passed between suitable pressure-rolls to remove such surplus. The strength and consistency of the glutinous bath may be varied. depending upon the material being treated and the uses for which such material is designed. In a majority of cases a hot solution of about one part of animal glue to about ten parts of water, by weight gives the best results. After leaving the bath of glutinous material, and having the surplus adhering to the surfaces removed, the paper, before drying, is passed into or through a solution of formaldehyde and water to "set" the glutinous material. The strength of this solution may also be variable, depending upon the paper and the uses for which it is designed. Generally, a solution of one part of formaldehyde (thirty-five per cent. solution) to five parts of water, by weight, gives the best results, particularly if this bath is cold instead of hot, though any particular temperature is not essentially necessary. The effect of the formaldehyde solution upon the glutin-saturated paper is to precipitate the glutinous matter and render it insoluble.

As the material comes from the formaldehyde-bath, the surplus adhering to the surfaces is removed by mechanical means, pressure rolls being probably most convenient. The paper is then dried. The best result in drying is attained by the air-blast, i.e., projecting blasts of air against both surfaces of the paper. This drying removes all the watery constituents and leaves the paper in a toughened or greatly strengthened condition, but not in practical condition for commercial uses, as it is brittle, horny and stiff, and has an objectionable odor and taste on account of the presence of the aldehydes, paraldehydes, formic acid and other products, the result of oxidation, hence needs to be "tempered." Now, while the glutinous material is rendered insoluble—that is, it is so acted upon by the formaldehyde and the chemical action which takes place while the united solutions are giving off their watery constituents that it will not fully dissolve—it is, however, in a condition to be acted on by moisture, as it will swell and absorb or take up permanently by either chemical or mechanical action a percentage of water and will also become improved in many respects, so that to temper and render the paper soft and pliable and adapt it for most commercial uses it is subjected to moisture, which penetrates the paper, causing a swelling in all directions, filling the interstices perfectly and resulting in "hydration" throughout the whole cellular structure. Two actions, mechanical and chemical, appear to take place, the mechanical action being the temporary absorption of water, analogous to the absorption of water by a dry sponge, the chemical action being the permanent union of water with the treated paper, analogous to the union of water and tapioca, causing swelling, or like the chemical combination of water with lime or cement. For this purpose pass the paper into a bath of hot water, saturated steam or equivalent heat-and-moisture medium, thus causing the fibres and the non-soluble glutinous material filling the interstices to expand in all directions and forcing the glutinous material into all the microscopic pores or openings and into the masses of fibre, causing a co-mingling or thorough incorporation of the fibres and the glutinous compound, and at the same time, as heretofore indicated, a change, (hydration) takes place, whereby the hardened mass of fibre, glutinous material and formaldehyde becomes tempered and softened and the strength imparted by the previous treatment increased. To heighten the tempering and softening effect, one may in many instances introduce glycerine in the tempering bath, and in most cases one two-hundredths in volume of glycerine gives the best results.

The paper when dry is in condition for most commercial uses, it being greatly strengthened, more flexible, more impervious to moisture, acids, grease or alkalies, and is suitable for the manufacture of binder twine, carpets and many novelties, for dry wrappings and lining packing cases, etc., but is liable to have a disagreeable taste and may carry traces of acids, rendering it impracticable for some uses—for instance, wrapping butter, meats, cheese, etc., after receiving the alkali treatment. The paper is also valuable for packing for joints in steam, water and other pipes or connections. To render the paper free from all traces of acidity and all taste and odors, the inventor passes it through a bath of water and a volatile alkali (ammonium hydrate), the proportion by preference in a majority of cases being one one-hundredth of ammonium hydrate to ninety-nine one-hundredths of water by volume, and a small percentage of wood-alcohol may be added. The bath is perfectly cool, but a variation in its temperature will not to a serious extent interfere with the results. The effect of this bath followed by drying is to complete the chemical reaction and destroy all taste or odor, removing all traces of acids and rendering the paper hygienic in all respects. The material may be calendered or cut and used for any of the purposes desired. If the material is to be subjected to the volatile-alkali bath, it is not necessary to dry it between the tempering and volatile-alkali baths.

The inventor claims that paper made in this way will be found to be greatly strengthened, some materials being increased in strength from 100 to 700 per cent. It will be non-absorbent to acids, greases and alkalies, and substantially waterproof, and owing to its component integrate structure will be practically non-conductive to electricity, adapting it as a superior insulating material, and may with perfect safety be employed for wrapping butter, meats, spices, groceries, and all materials, whether unctious or otherwise.

By the term "hydration" is meant the subjecting of the material (after treatment with glutinous material and formaldehyde and drying) to moisture, whereby the action herein described takes place. A sheet or web of paper can be treated by this process as rapidly as it is manufactured, as the time for exposure to the action of the glutinous material need not be longer than the time required for it to become saturated, this, of course, varying with different thicknesses and densities, and the length of time of exposure may be fixed without checking the speed by making the tank of such length that the requisite time will elapse while the sheet is passing through it and the guides so arranged as to maintain the sheet in position to be acted on by such solution the requisite length of time.. Four seconds exposure to the action of formaldehyde will be sufficient in most cases.

* * *

Scandinavian Pulp and Paper Associations.

The annual meetings of the associations connected with the pulp and paper trades of Norway and Sweden have been held.

The meeting of the Svenska Pappersbruksföreningen (the Swedish Papermakers' Association) was held in Stockholm, and was presided over by Gust. Grevilli. The future of the Swedish paper trade was discussed, and a feeling was strongly manifested in favor of an advance in prices. The progress made by Swedish mills and the increase in the export trade was pleasurably alluded to; and it was also pointed out that prices had been better all round for Swedish paper abroad. Mills reported plenty of orders in hand. The revised Customs tariff of Germany for Swedish goods was discussed with much animation. It was announced that the German Government had decided to lower the tariff on thin (light weight) papers from 60 marks per 1,000 kilos to 40 marks, and for thick (heavy weights) the tariff is to be increased from 30 to 40 marks per 1,000 kilos. The latter was received with much dissatisfaction, and it was resolved to bring the matter before the Minister for Foreign Affairs, with the request that he make representations to the German Government protesting against the increase of duty on heavy papers. The question of freights to German ports was discussed, and a resolution moved that the steamship companies be approached, with the view of obtaining a uniform rate throughout the year.

The meeting of the Skandinaviske Trämasse Föreningen (the Swedish Section of the Scandinavian Mechanical Wood Pulp Association) took place at Stockholm also. Owing to the strong feeling prevailing, brought about by the political situation, the correspondent of the "Paper Maker" says the Norwegian Section abstained from attending, consequently the meeting was a small one, though representative of Sweden. H. E. Montgomery, M.P., the president, occupied the chair. As a whole, the trade was considered satisfactory, and the statistics produced showed that prices were being well maintained and production normal. Reference was made to the weakness shown by some of the small mill-owners in the past, but it was not thought that in the near future these mills would break away and be tempted by lower prices, as on previous occasions. The effect of the present Canadian competition was well discussed, and finally it was concluded that there was little to be feared from that source, several members of the Association stating that it was their belief that the United States was the best market for Canadian pulp. It was decided to create a separate section of the Association for the north of Sweden, it being shown that Norrland, in consequence of the excellent pulp wood supplies, is becoming a more important centre of mechanical wood pulp manufacture, and, therefore, it is considered by most of the members belonging to the north that it is too far for them to have to come to Stockholm to discuss matters concerning Norrland. Sundsvall is to be the headquarters of the new section. During the dinner a friendly greeting was received by telegraph from the Norwegian section at Christiania.

The annual meeting of the Norwegian Section of the Scandinavian Wood Pulp Association (Skandinaviske Trämasse Föreningen) took place at Christiania. H. E. Heyerdahl, the president, was in the chair. There was a very good attendance of the mechanical pulp-makers. It was reported that the position of the sellers just now is undoubtedly a strong one; further, that the market has been for some time past a very animated one in spite of the pessimistic utterances that have been made in more than one quarter in the foreign trade press. It was also urged that, as a whole, the British buyers have not decided yet to accept the prices asked for next year's delivery, though a fair amount of business has also been done with Great Britain. The Continental buyers have shown more willingness to pay the prices asked. The Finnish production for 1906, it was mentioned, had practically been sold some time ago, as also the major portion of the Swedish makers' productions of moist, particularly the Baltic districts; so that it was held these facts not only impart strength and firmness to the market, but rendered it almost impossible for the market to be broken by a lowering of prices in the spring. Canadian wood pulp makers being considered, for the present, as not being a serious competitor, the Norwegian makers are assuming that they will have the market left entirely to themselves for some time to come. A member stated that he considered the list of importers of pulp which was published in England was somewhat misleading, and conveyed to the British paper-maker a false impression. He said, also, that they should, at the same time, look to the French, Belgian, and Dutch import lists, which would open their eyes to the true position of affairs. The fact that no new mechanical pulp mills are being built in Norway was dwelt on, and also that a large amount of pulp was coming off the market by reason of the Holmen-Hellefos, Embretsfos, and several Swedish mills consuming—or about to consume—their wood pulp production for paper-making in Scandinavia.

SAMPLING AND TESTING PULP.

The autumn meeting of the Paper Makers' Association of Great Britain and Ireland was held in London on the 29th November, when, among other subjects, the sampling and testing of wood pulp was reported on by Joseph Dixon, the chairman. Mr. Dixon, who was a member of the committee formed to meet the deputation from Scandinavia last May, said it was one of the vital questions affecting the makers of news paper, and, in fact, every one who used wood pulp largely. Last May Mr. Bommen, of the Scandinavian Association and Dr. Schibbye came over. Mr. Seddon and himself represented the makers and Mr. Andrews and Mr. Becker the wood pulp merchants. They had a pleasant discussion, and the ultimate result was that they agreed that certain things should be done. First, that a certain number of bales—he thought five—from Scandinavia should be chosen from five different mills, and five different bales of as many different makes should be chosen from five different mills in England. These should be brought together in Manchester, at the Manchester Testing House, or some such establishment where they had the necessary apparatus. It was agreed that these bales should be forwarded. Again, in September, he met Mr. Bommen and asked him why these bales had not been forwarded. The reason he gave was that they were waiting until the dry season in Scandinavia had passed, because it was difficult for a bale to get into normal condition in dry weather. They had not since heard anything more of them, and now it was a matter for the secretary to hasten the delivery of the bales and to settle the question. He believed that every one of them knew more about their own particular business than he did about his. He was learning every day a good deal about his own little business, and he thought no subject was so interesting as the testing of wood pulp. He had, with some domestic assistance at home—and it was a very interesting subject for young people to take up—taken a very elaborate series of tests of different bales and makes of pulp. As they knew, there were probably three or four methods of testing pulp. In one, a wedge of correct shape should be taken from a certain number of sheets in each bale; or a strip should be cut across the sheet; or a diamond shape should be cut from different parts of a sheet from different parts of different bales; or otherwise Mr. Sindall's method could be adopted. They had gone very carefully into this question, and the amount of difference was enormous. He would take an opportunity, before the matter was finally settled, of publishing, with the approval of the Association, some of the results they had attained, because he thought they would be most interesting to all of them. The Sindall method should not be permitted in any mill that had any regard for justice—that was the method of taking a little piece of pulp out of a sheet, perhaps a quarter of an inch deep, and tapering off to nothing—because that pulp, three minutes after it was taken, was no longer an average sample of pulp. They must have the same thickness of body to get a proper test. To take one firm of wood pulp merchants, with whom he did a very small portion of his business, they had allowed him this year nearly £500 for excess moisture in pulp. It showed how important this question was, and how much they might lose, or be robbed without knowing it if they did not attend to this department of their business. He hoped the Association would support the committee in this matter. He maintained that a man who bought pulp ought to know the formula a chemist adopted before that chemist came into his works.

THE PULP MANUFACTURER, THE LIMIT HOLDER AND THE SETTLER.

An esteemed reader of this magazine in Quebec writes us on the present and prospective relation of the limit holder with the settler and pulp manufacturers in the Province of Quebec. He says:

The pulp wood industry has been somewhat upset during the discussion of the import duty which was charged by the United States Government, but still a large quantity of peeled wood will be ready for shipment next year. There seems to be a disposition to reduce the quantity of rossed wood and increase that of peeled, because of the idea that there is a possibility of the decision on rossed wood being appealed to another court, and the United States Treasury being supported in charging the duty.

Regarding Crown Lands matters: You will have probably noticed in the papers lately the report of a colonization convention held at St. Jerome, and various suggestions were made by the speakers tending to minimize, or altogether do away with, the so-called friction between the lumbermen and settlers. Mr. Kelly, M.P.P. for Bonaventure suggested that a certain reserve of cultivatable lands should be made for colonization purposes, and the limit holders in whose territory this land is situated shall be given a reasonable notice before the lands are sold, so as to permit of his cutting the timber from off it. Before the areas above mentioned are open for settlement the Government are to construct roads, and this will greatly facilitate communication for the settlers.

This proposition is a very big advance towards a final settlement of this troublesome question, as it will guarantee to the limit holder (if the notices served are sufficiently long) to cut the merchantable timber from the lots, and it will also have the advantage for the settlers of concentrating settlements and giving them communication. Mr. Kelly suggests that the balance of the lands under license, except those reserves above mentioned, shall be completely shut to settlement until such time as necessity arises for the reserving of other areas. While not wishing to say that, in its present state, Mr. Kelly's suggestion is perfect, I consider that he has had the courage to approach this matter in a thoroughly statesmanlike manner, and has looked upon the claims of all parties from an unprejudiced point of view.

Fortunately we have at the present time as Minister of Crown Lands a gentleman who takes a thorough interest in all matters pertaining to his Department, and he has shown, since occupying the office a desire to administer his Department in the best interests of all concerned. Owing to the peculiar conditions which have arisen on account of the traffic in pulp-wood and railway ties, etc., he has had to contend with very serious difficulties and sharp and ingenious speculative methods on the part of unscrupulous persons but as he has shown a firm grasp of the situation and a desire to rigidly enforce the regulations, it is to be expected that in a short time a great part of these abuses will disappear.

Mr. Turgeon is a gentleman of high intelligence, and this, coupled with his eloquence and natural desire to give fair play, gives promise that the administration of this most important department of the Government will improve.

APPLICATIONS OF WOOD PULP.

(Translated from "La Papeterie" for The Pulp and Paper Magazine.)

Insisting upon the importance of machine-made wood pulp, one of the most largely used substances in paper-making, would be useless advice for paper-makers; however, it may be interesting to say that wood pulp is largely used not only in paper-making, but in quite a number of other applications relating to paper industry. We have succeeded, especially in the last few years, in utilizing wood pulp for a great variety of works of art, fancy goods, and even for utensils of daily use; and we can see now all kinds of receptacles, such as pails, etc., now made of wood pulp. It is true that we use other products in combination with wood for preparing this pulp, and by this means we have discovered new substances that render invaluable services in their different applications.

One of its best-known products is "Xylolithe." It is made principally from wood pulp mixed with cement, gypsum, chalk and mineral salts. Xylolithe is a solid substance, which can be polished. It has the appearance of wood, and is chiefly used for covering room floors, stairs, corridors, and it shows in these applications certain remarkable properties.

When used with a smooth surface "Xylolithe is easily kept clean, and it has the advantage of not accumulating the dust, as its pores are very small. Floors covered with Xylolithe are not subject to the influence of moisture or the change of temperature. The reason is that the pulp has been so prepared that as a contrast to wooden floors, we see no cracks nor crevices under the action of sun or moisture. Thus, wood pulp used as "Xylolithe" is the most up-to-date product to floor rooms, because it is quite in accordance with all hygienic and practical claims.

By using wood pulp for making that product called "papier mache" the latter can be sold far cheaper, and consequently that industry has grown to great proportions. As we all know, that industry makes all kinds of articles, such as theatre designs, toys, etc., but this is because wood pulp is used in place of paper, whose price is higher. The making of toys consumes a large quantity of wood pulp, which is now substituted for porcelain, which was formerly used. Thus, doll heads and thousands of other articles used for amusing children are made of wood pulp, to which is added in different proportions clay, gypsum and glue.

Wood pulp is a very good insulating substance. In Germany it is strongly recommended for filling the space between floors and ceilings in new buildings. It is also used to deaden sound by mixing with saw dust, and is sold in compressed plates.

We may also speak of the "wood cement," which is used for covering roofs. We often see in the country a mixture of asphalt and sand, and it is commonly called wood cement. In fact, real wood cement has better lasting qualities than any similar product, and does not have to be renewed every year. It is composed chiefly of wood pulp mixed with cement. The glue makes them stick together and the tar renders it waterproof. It is possible also to make hard stone blocks with wood pulp.

When we add some powdered quartz to pulp diluted in water, cast this mixing into moulds and leave it dry, we obtain tiles and building stones called "artificial." These materials when coated with soluble glass develop remarkable properties for resisting moisture. When these stones are wanted to be very hard they are coated with metallic oxides, such as oxide of lead or of copper.—Adolphe Linhardt.

TALC IN THE PAPER TRADE.

George Johnson, Dominion Statistician, writes about talc in Canada:

There does not seem to be any great demand for talc or soapstone in Canada. The customs returns do not mention either talc or soapstone as an export or an import. The output in Canada has varied from 1,374 tons valued at $6,240, 1892, to none at all as in 1898 and 1901. In 1902 the output was 689 tons, valued at $1,804; in 1903 it was 688 tons, valued at $2,064; and in 1904, 840 tons, valued at $1,875. There has been an increase in the quantity during the three years. The price has varied, that of 1902 having been $2.60, of 1903, $3, and 1904, $2.23.

On looking into the statistical experience of the United States, I find that the production and price are variable, same as in Canada. Thus, 1902, output, 97,954 tons, valued at $1,140,407; 1903, output, 86,901 tons, valued a $840,060. This indicates decreasing demand, since price and quality, both in 1903 are less than in 1902.

Enquiry into the cause of these decreases leads to the conclusion that they are due to the protracted strikes at some of the paper mills in the United States, the ground talc being used as a paper filler. Mr. Pratt, an American expert, says "the demand for fibrous talc in the manufacture of paper is increasing with the increase of the manufacture of paper, for it gives much better satisfaction than clay, which is still used to some extent, but which was used formerly almost exclusively as a filler for paper." The same authority says "much of the talc used is not suitable for the manufacture of ground talc, but is used in the manufacture of wash tubs, laboratory sinks, etc."

Given the right kind, there is no doubt that the development of paper making in Canada will have the same effect as in the United States, a development of the demand for fibrous talc.

CATALOGUES AND ADVERTISING MATTER IN AUSTRALIA.

The following are the regulations adopted by the Australian Customs Department for advertising matter received through the mails:

1. Advertising matter is dutiable at 3d. per pound under item 122 (A) of the Commonwealth tariff.

2. Duty at this rate is levied on catalogues, price lists, trade circulars, and all similar advertising matter, introduced through the post, even when forwarded in single copies addressed to individuals, provided that the total weight of such single copies forwarded by any consignor by any one mail to any one State of the Commonwealth is not less than (4) four pounds in weight.—Vide paragraph 4.

3. The duty on advertising matter may be paid by any of the methods specified hereunder:

(a) The weight of any one mail may be baulked by the consignor and duty at 3d. per pound remitted in one sum to the Deputy Postmaster-General of the State to which the catalogues, etc., are addressed.

(b) Duty may be paid on total weight of any one mail by consignor's agent in the Commonwealth.

(c) If neither of the above methods can be followed, duty is collected upon the packets containing the catalogues, etc., according to the following scale:

Up to 3¾ ounces	......	½d. = 1 cent.
" 6¼ "	......	1 d. = 2 "
" 9 "	......	1½d. = 3 "
" 12 "	......	2 d. = 4 "
" 14½ "	......	2½d. = 5 "
" 16 "	......	3 d. = 6 "

4. In cases where the total duty on advertising matter by any one mail addressed by any one consignor to any one State of the Commonwealth does not exceed 1s., the payment of duty is waived.

5. Duty at 3d. per pound is levied on insets introduced in magazines, etc., whether the insets are loose or fastened into the magazines, etc. This does not, of course, apply to the ordinary advertising pages of magazines, etc., and is subject to the rule laid down in paragraph 4.

A FOREST FIRE ALARM.

Something new in the way of a fir alarm service has been adopted by owners of timber lands in a portion o Maine. The new service has been i operation about three months, and it i asserted that it has saved the woodland owners from losses that otherwis would have amounted to millions of dollars. Heretofore a forest fire has been regarded as something almost beyond control, after it has once been well started, and something practicall beyond discovery before it has reache such proportions as to make heavy los, inevitable. It is rather startling to b told that the almost impossible work o protecting vast forest areas from dan age by fire has practically been accomplished, and in a comparatively simp manner. Observatories have bee built on the tops of three mountain many miles part, and equipped with tel scopes, range-finders and telephone communication with the headquarters o various fire wardens. The attendan stationed in the observatories, spend t day, and some portions of the night well, in studying the landscape by mea of their telescopes, and at the first a pearance of smoke that cannot be a counted for as coming from a sour that is harmless, the spot is located means of range-finders, word is telepho ed to the nearest fire-warden, and in very short time, and before the blaze c spread to dangerous proportions, t fire-fighters are on the spot. The c of the service is said to be ridiculou small in comparison with its value. T enterprise of the Maine forest owners, commended to those of other sections mountainous territory, that means pr tically, wherever there are large ar of timber-bearing land.—"Paper Mills.

INDEX TO VOLUME III.

Asset, Canada's Greatest.......... 1
American Forest Congress 12, 35
American Pulp and Paper Association 42
Alberta, Pulp-wood In 114
Austria-Hungary, Mills of (Mar., ad. p.) 22
Absorbency of Printing Papers.... 125
Announcement 167
Australia, Canadian Paper in 191

British Patent Law, Changes in.. 12
British Paper Trade and Tariff Reform 18
Bleaching of Wood Pulp, The 21, 40, 188
British Pulp and Paper Notes, (Jan. ad. p.) 12
British Wood Pulp Association . 321
British Columbia, Pulp Resources in 32
Bank Notes and Paper Money.... 48
British Chemical Market, (Feb. ad. p.) 17
British Columbia Pulp-wood 139
Bentley and Jackson Machine, New 163
Book Notes 202
British Capital in Canada 205
British and Foreign Pulp Market........ 268
British View of Canadian Trade.. 269
Britain's Pulp Supplies 284

Cushing Sulphite Fibre Case, 181, 203, 266
Countervailing Duty on Quebec Pulp 275
Canadian Pulp-wood Samples in Norway. 305
Canada's Greatest Asset 1
Canadian Forestry Association 5, 48, 91, 102, 141, 228, 283, 308
Canadian Forestry Association at Ottawa 141
Coloring, Hints on........ 9
Changes in British Patent Law... 12
Calculating the Weight of Paper.. 23
Canadian Rubber Co.'s Convention (Jan. ad. p.) 17
Canadian Rubber Co 162
Canadian Imports of Paper 29
Canadian Paper Trade, the Drift of 47
Can. Paper and Pulp Association 317
China Clay 56
Care of the Wire Cloth of Paper Machines 56
Comment on Mr. Dubuc's Petition. 58

Carrier, Laine & Co., Levis.....145, 307
Canadian Pulpwood in the Watertown District (Nov. ad. p.).... 45
Countervailing Duty, The (Nov. ad. p.)........ 43
Canadian Pulp-Wood Question, Comment on articles in Paper Trade Journal 59
China Clay in Cornwall 126
Chemical Markets, Apl. ad. p. 14; May ad. p. 14; June, ad. p. 14; July, ad. p. 40; Sept. ad. p. 41. Oct., ad. p. 41; Nov., ad. p. 312; Dec., ad. p. ....
Chemical Reagents 130
Chemistry of Paper Making, The. 149
Canada, British Capital in 205
Catalogues, Etc. (Aug. ad. p.).... 8

De Cew, J. A., "A Plea for Official Methods in Testing Ground Wood and Fibres"............. 225
Drift of Canadian Paper Trade, The...... 47
Directors' Report C. F. A......... 91

Economical Digesting 134
European Paper Trade and Canadian Pulp 305

Forestry and Pulp-wood, 27, 46, 112, 183, 232, 313
Fort Frances, The Pulp Mills at.... 52
Forest Wealth of the Province of Quebec 63
Forests of Canada 1
Forests, New Brunswick's.......... 84
Forest as a National Resource, The 88
Forestry Policy, Quebec 147
Fourdrinier Machine, The......... 158
Forestry Department at Laval, Establishment of 59
Forestry Convention, The 283
Forests and Climate 306
Forests and the Pulp Industry.. 316

Great Britain's Paper Trade 263
Government Pulp-wood Policy, (Apl. ad. p.).................. 19
Garments, Paper 208
Grand Falls Pulp and Paper Development 238
Germany's Paper Trade 279, 327
Grand Trunk Pacific and Pulp Development 315

Hints on Coloring 9
Hand Made vs. Machine Made Paper 61

Hygrometer, The (Mar. ad. p) 22
Harmsworth Deal, The 206
Handling and Testing Pulp 277

Incorporations, New (Mar. ad. p.) 21, 126, 166, 184, (July ad. p.) 43, 234, 268

Japan's Paper Trade 13
Japan, Paper Manufacture In 136

Lake Superior Region 315
Literary Notes,...... ...... 24, 45, 164
Lake St. John Co., The Pulp and Paper Capacities of 177
Lake Superior Corporation 282
Leblanc Soda Process, (July ad. p.) 41

Mill Matters, 6, (Jan. ad. p.) 17, 34, 110, 139, 165, 185, 212, 235, 260, 285, 314, 338, 339,......... 341
Machine for Reinforced Paper 37
Mills in the Portneuf District 51
Minister of Crown Land's Statement of the Pulp Interests .. 57
Mills of Austria-Hungary, (Mar. ad. p.) 22
Maine, Woods of 127
Mispec Pulp Mill, The.. 143
Machine Peeled Pulp, Duty on, (July ad. p.) 40

New Safety Paper, A............. 10
Notes, British Pulp and Paper, (Jan. ad. p.) 12
New Brunswick's Forests 84
Notes, News 144, 146
Northern Mills Co., The 210
Notes on Wood Pulp for Paper-Making 272
Newfoundland Pulp Industries 307
Northern Sulphite Mills 301

Official Method in Testing Ground Wood and Fibre, A Plea for... 225

Pulp and Paper Currency, 2, 31, 170, 193, 218, 241, 265, 290, 319
Printing and Publishing 5
Personal, 7, 51, 113, 165, 185, 233, 267, 309
Pulp and Paper Markets, 8, (Feb. ad. p.) 14; (Mar. ad. p.) 14, 17 (Apl. ad p) 14. (May ad. p.) 17; (June, ad. p) 38; (July ad. p.) 30; (Aug. ad. p.) 40; (Sept. ad. p.) 28; Oct. 288; Nov. 312 (Dec. ad. p.) 38
Pulp and Forestry Problems in N. B........ 280
Policy, Facts for Framers of a Pulp and Paper 167
Pulping Engine for Waste Paper, W. Wursters' 172
Paper Garments 208
Pulp and Paper Capabilities of the St John Country 17
Peat for Paper 21
Paper Trade Relations with U. S. and Great Britain 26
Publishers as Paper Owners, (Sept. ad. p.) 4
Paper, A New Safety.............. 1
Paper Trade, Japen's 1
Paper Trade and Tariff Reform, British 1
Pulp, the Bleaching of Wood 21, 4
Paper, Calculating the Weight of. 2
Pulp-wood Policy, Ontario's 2
Paper, United States, Hand-made.. 2
Pulp and Paper Association, American........ 4
Pulp Grinder 32
Paper Money and Bank Notes...... 4
Pulp Mills at Fort Frances......... 5
Pulp Trade, Quebec Legislation on the 5
Paper, Hand-made vs. Machine-made 6
Pulp-wood Regulations, Quebec .. 6
Pulp-wood Policy, Ottawa's Opinion of 10
Pulp-wood, Duty on 11
Power and Pulp 11
Paper Colorist, The 12
Pulpwood and Forestry 27, 46, 11 183, 232, 31
Paper, Canadian Imports of........ 2
Pulp Resources of British Columbia 3
Paper Trade, Great Britain's 26
Pulpwood in Alberta 11
Papers, Working Up Broken........ 11
Pulp Separator 12
Printing Papers, Absorbency of.... 12
Paper Maker, A Veteran........... 13
Paper Manufacture in Japan 13
Pulpwood in British Columbia ... 13
Paper Fibres 15
Pulp and Paper Question, .. 196, 22
Paper, Canadian Paper in Australia 19
Pulp and Pulp-wood, U. S. Duty on 21
Pulp Trade Question 22
Pulp-wood Policy, Government, (Apl. ad. p.)................. 1
Paper Machine, The World's Widest 14
Paper Making, The Chemistry of. 14
Pulp and Paper Possibilities of B. C. 292
Pate De Bois, "The Drift in the Canadian Paper Trade......... 47

Quebec Legislation on the Pulp Trade 54
Quebec Timber Limit Holders' Association 60

INDEX—Continued.

Quebec Pulp-wood Regulations .. 62
Quebec, Water Powers of 117
Quebec Forestry, Policy 147
Quebec Timber Limits Sale 202
Quebec Pulp-wood Association..... 308

Retrospect, A...... 15
Rag and Paper Stock Markets, (Jan. ad. p.) 12, (Feb. ad. p.) 14; (Mar. ad. p.) 14; (Apl. ad. p.) 14; (May, ad. p.) 15; (June, ad. p.) 43; (July ad. p.) 41; (Aug. ad. p.) 39; (Sept. ad. p.) 40; (Oct. ad. p.) 39; (Nov.) 312; Dec. 41
Reinforced Paper, Machine for.... 37
Report of D. H. Ross, Can. Gov. Agent at Melbourne 146
Rossed Wood Duty 227
Revolution in Sulphur Production, A...... 173
Reducing Paper Stock to Pulp..... 303

Sampling and Testing Pulp 333
Sulphite Process, New............. 41
Soda Fibre, New Process in........ 53
Sized Paper, Odor in 55
Soda Recovery 129
Stephenson, Mr. Leonard 133
Swedish Paper Mills Association, Resolution Passed at 142
Scandinavian Pulp and Paper Associations 332
Scandinavian Markets, (May ad. p.) 15
Sulphite Productions, A Revolution in 173
Stebbins Bisulphite Liquor Apparatus 311
Swedish Kraft Paper Process...... 299

Tariff Reform, British Paper Trade and 18
Trade Notes 55
Talc in Can. Paper Trade 336
Tack to S'uth'ard, A 104
Technical Education 318
Temagami District, Lake, (May ad p.) 8
Turgeon, Hon. Adelard............ 137
Tariff Commission and the Paper Trade 297
Timber Limit Holder and Pulp Manufacturer 334

Use of Fillings.................... 271
United States Hand-made Paper... 28
Utilization of Sulphite Liquors, (June ad. p.).................. 8
United States Pulp Duties,.. 104, 289

Viscose, The Value of............ 16

Water Powers of Quebec 117
Woods of Maine.................. 127
Wurster's Pumping Engine for Waste Paper 172
Wood Pulp, Uses of.... 335
Wood Pulp, The Bleaching of..... 188
Waste Paper, Re-manufacture 320
Water Proof and Acid Proof Paper 330
Western Canada Pulp and Paper Co., The....................... 204
Wrapping Paper, Process for...... 209

PERSONAL.

F. W. Denison, for the past three years superintendent of the Jonquieres Pulp Co., Jonquieres, Que., has returned to the States.

James Acton, publisher of the "Shoe and Leather Journal," and the "Furniture Trade Journal," Toronto, is to be congratulated on the achievement of his son, Leonard T. Acton, who, at the age of 16, has won the Prince of Wales Scholarship,, the Edward Blake scholarship, the scholarship in modern languages, the first scholarship in science, and three other scholarships at the Harbord Street Collegiate Institute, Toronto.

A World's Fair is to be held at Milan, Italy, in 1906, and another at Christchurch, New Zealand, in November and December, 1906, and January, 1907. The president of the New Zealand exhibition is the premier, Rt. Hon. R. J. Seddon, a statesman well known in Canada. The Canadian pulp and paper manufacturers ought to be represented at both these exhibitions, and along with the exhibits of paper and pulp there should be a display of samples of Canadian forest products. The same exhibit that is made at Milan, where British manufacturers are to be well represented, can be taken on to New Zealand. The secretary of the New Zealand exhibition is E. J. Righton, Christchurch.

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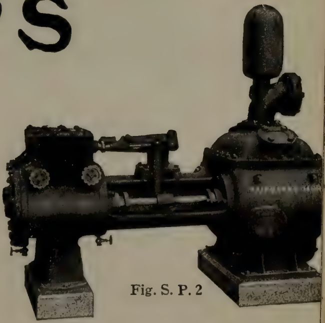

Fig. S. P. 2

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PULP AND PAPER MARKET.

Toronto, 26th Dec., 1905.

The Christmas holiday trade has made ore than usual demands on the paper ealers, a very large amount of literare having been sent out through the st and otherwise. This has made a big hole in the stocks of news and book papers, and has kept prices from receding. The general report is—good demand, but low prices. It is hoped that a better story will be told in the new year. The board mills, after passing through two years of depressed prices, are at last able to make an ad-

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vance, and trade is active in this branch.

In the pulp market there is not much change to note in prices. Rags remain phenomenally high all over the world, and, owing in part to the uncertainty of the water supply, ground wood pulp is stiffening in price, but sulphite remains about the same. Water in the rivers of eastern America, both on the Canadian and United States side, remains low.

In the New York market there is rather more enquiry for ground wood and sulphite, both foreign and domestic, is steady at former rates.

In Manchester a fair amount of business in mechanical and chemical pulp is being done at rates lately ruling.

CHEMICAL MARKETS.

In the United States the market for paper and pulp chemicals is rather active, without any noteworthy change in any line, except resin, which has advanced sharply under the influence of an extra demand at Savannah. China clay is in extra demand, and there is a scarcity of spot goods. Domestic clay is quoted at $7.50 to $9, and foreign at $11.50 to $18 a ton.

The British chemical markets are quiet.

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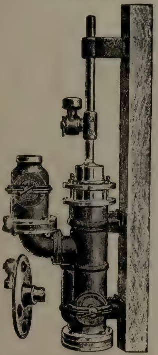

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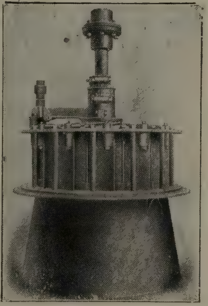

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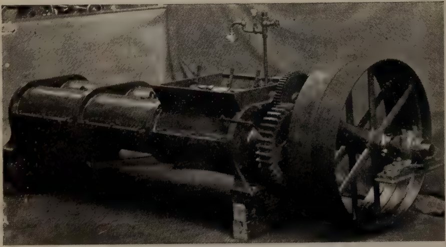

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RAG AND PAPER STOCK MARKET.

Montreal, Dec. 26, 1905.

The market for paper stock continues firm, with some marked advances, and indications of scarcity, particularly of manila rope and stock for building and roofing papers.

Factory contracts for new clippings are being renewed this month generally at somewhat advanced figures.

Prices for the various grades of waste paper are not quite so firm, and in some lines a little off. The reason for this is not apparent, unless it be the disposition to clear up at the end of the year is pressing more of this stock on the market than is required. A reaction in accordance with the rest of the market ought to take place before long.

If the contemplated movement on the part of Canadian paper-makers to have the exportation of pulp-wood prohibited is successful it would have the effect of increasing the price in the United States of all paper stock materials.

No. 1 white shirt cuttings..	$5.25	to	$5.75
Light print cuttings......	4.00	to	4.50
Unbleached cuttings	4.50	to	5.00
White shoe clips.........	4.50	to	5.00
Colored shoe clips.......	2.75	to	3.25
Domestic white cottons..	2.25	to	2.50
Blues and thirds.........	1.40	to	1.50
Roofing stock	.70	to	.80
Waste papers	.35	to	.40
Manila rope	2.75	to	3.00
Bagging	.65	to	.75

Mill Matters

F. McOuat & Son, Lachute, report that they are unusually busy on stuff pumps, boiler feed pumps, slab resaws, and general machinery. They are contemplating a change of premises, as their business has outgrown their present quarters.

A fire caused by an overheated connection in the shafting totally destroyed the large pulp mill of the Skowhegan Pulp Company at Skowhegan, Me., on December 10th. The loss is placed at $30,000, with insurance of $25,000. The company employed thirty men, and had a daily output of eighteen tons.

The report that the Miramichi Lumber Company had been merged into the International Paper Company is denied by Charles E. Oak, managing director of the former company. The name of the Miramichi company has probably been confounded with the Richards Lumber Co., recently acquired by the International Paper Co.

Our readers are again reminded of the Canadian Forestry Convention a Ottawa, on the 10th, 11th and 12th o January. The program is a comprehensive one, and will be specially interesting to the pulp and paper interests The Canadian railway companies have granted round trip tickets to Ottawa at a single fare, the conditions of which will be explained on application to th secretary, R. H. Campbell, Dept. o Interior, Ottawa.

E. Copps, of Detroit, representing syndicate of United States and Britis

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capitalists, has interviewed Hon. Dr. Reaume, Minister of Public Works of Ontario regarding enterprises in New Ontario. The first thing the syndicate wants is a railway to run north from some suitable harbor on the north shore of Lake Superior or Georgian Bay into the timber and mineral country, and Mr. Copps wants a charter. Pulp and paper manufacturing and mining are the enterprises which the syndicate is said to be specially interested in, and it is said they have ample capital.

The initial operations for the establishment of a big plant at Swanson Bay by the Oriental Pulp and Paper Co. have

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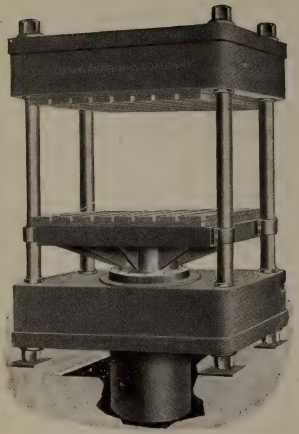

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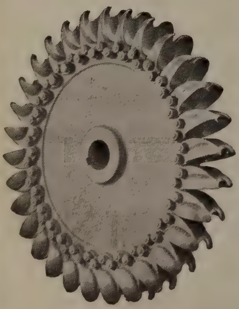

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been started this month. J. M. Mackinnon, managing director, has gone to Swanson Bay, accompanied by D. McCallum, who has secured the contract for clearing the site of the proposed mill and taking out the piling for the proposed wharves. The sulphite mill first to be erected will have a capacity of twenty-five tons per day. The company intends to cut the pulp wood in its adjacent timber limits, which also comprise large quantities of timber suitable for industrial purposes. It is intended to acquire a new tug for towing the logs to the mill. The plant, it is hoped, will be manufacturing pulp within a year. A town site has been laid out at Swanson Bay.

THE EGYPTIAN PAPYRUS.

The papyrus plants of ancient Egypt are not all dead, though papyrus paper making is a long lost art. As a beautiful ornamental plant the papyrus thrives to-day, and is perhaps destined to become a favorite along the banks of our

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warmer streams and rivers. In Florida or Louisiana, in a noiseless electric launch, the visitors may then glide up creeks and winding rivers, and drift back some thousand years into the dim and hazy days when the Pharaohs and the Ptolemies and Cleopatra ruled the land of earliest civilization.

In the days of paper making Egypt, the banks of the Nile near the sea must have been covered with great stretches of this wonderful plant. The bas-reliefs on Egyptian monuments show the methods of this culture while the great Alexandrian library, with its half million long papyrus rolls, burned by the ruthless Mohammedans, gives an idea of the extent of its use. Alexandria was the centre of its manufacture and throughout the Nile delta were large plantations of this graceful and lordly plant.

As late as the eighteenth century travellers in Egypt found the fellaheen or peasants making mats of papyrus, although the art of paper making has been long dead. To-day you may search lower Egypt in vain for a single plume of papyrus, although on the upper reaches of the Nile you can still lose yourself in its dense forests, which everywhere line the banks of the sluggish river. The few plants now growing in the Ezlee Kieya garden in Cairo are said to have been imported there from Hamburg.

It seems strange that a plant which once played such a role in the world of literature and history should have become so neglected that probably not one in ten thousand could tell what it is like or would know it if they saw it, except that they would recognize a plant surpassingly beautiful.

To enthusiasts on beautiful plant forms it were well worth a visit to Sicily, just for a look at the miles of papyrus which overhang the Anapo river, as well as its source, a deep clear spring just outside the ancient city of Syracuse. It is difficult to conceive a more brilliant or more fairy-like sight than the thousands of smooth, slender, leafless stems, rising in graceful curves from the water to a height of fifteen feet and bearing at their summits feather duster tassels of delicate green filaments. As the boat winds in and out among this multitude of smooth stems, or as you separate the tassels which nearly touch overhead, it is easy to believe yourself in a tropical forest where all the tree trunks are brilliant green and all the leaves are threads of but a lighter vivid hue. This wealth of papyrus on the Anapo is one of the most fascinating sights in the world, and every year thousands of visitors make the excursion from Syracuse to view it.

If the experiments which are being started with the papyrus by the Office of Plant Introduction of the Department of Agriculture are as successful as Mr. Fairchild, the agricultural scientist in charge of the office, hopes, that plant may yet become a favorite ornament in Florida, where many streams like the Anapo are to be found, and where thousands of visitors repair annually to look upon and enjoy strange plants and fruits and to thaw the cold and frost from the marrow of their bones.—Scientific American.

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NON-WARPING BOARDS FROM PULP.

Among U. S. patents recently issued is one to Charles Shepherd, of New York City, for improvements in pulp board. The objects of the invention are to so utilize and to so treat wood pulp as to obtain a product which may be used as a substitute principally for wood and which may be made up into boards to be used especially in places where it is important to avoid warping and where it is desired to shape and put the board in place by tools such as are ordinarily used in the shaping and working of wooden boards.

"In carrying out my invention," says Mr. Shepherd, "I avail myself of the qualities and peculiarities of wood pulp when compressed, and particularly its porosity, which makes it particularly receptive to resinous substances and which makes its thorough impregnation by such substances possible, and I also avail myself of the quality of paste to become reinforced by being combined with such resinous substances.

"The sheets of board which I embody in and convert into my final product contain the pulp of wood, produced by freeing suitable wood of its bark, passing it through a grinder so as to reduce it to fibre thoroughly mixed with water which is supplied to the grinder, afterward withdrawing the water frim it, preferably by conveying a proper quantity of the pulp to a trough underneath the piston of a hydraulic press and there squeezing out the water so as to form a sheet of the thickness required. After drying the sheets a product is obtained which is comparatively porous and which has no grain running in a particular direction, as is apt to be the case with paper calendered in usual manner.

"Sheets of wood pulp so produced are pasted together in a preliminary manner by layers of any ordinary or suitable paste, which may consist of flour and water, pressure by the hand of the operator or any light pressure being sufficient to bring the sheets together, after which the body so formed is dried, either in the open air or by artificial heat. I then immerse such body in a heated resinous solution, consisting, for instance, of equal parts of the ceiling varnish of commerce and benzine, so as to cause the same to enter into the body so formed, so as to penetrate said sheets and the paste, joining the same together, and after drying the board so prepared, I may shellac the same to further protect it and to give a finish to its surface.

"I am aware that it is not new to treat sheets of pulp and paper by immersing the same in resinous solutions and afterwards pasting or cementing the same together under considerable pressures and also after saturating the blocks so formed with tar varnish; but the products so obtained vary materially from that obtained by me, my product being more homogeneous than the products above referred to, due particularly to the greater porosity of the sheets of wood pulp which I employ that permits the heated solution freely to enter into and through the same, and to more readily reach and more effectively reinforce the temporary joints between the same, made of paste, as described.

"Besides, my product not having any grain it is not apt to split, and it can be treated and worked with any of the tools ordinarily used in manufacturing wooden articles. It will better resist the influence of moisture and of heat and any tendency to warp or twist than the paper product above referred to, and in general to a greater degree possesses the advantages offered by wood, owing to the fact that it contains largely the same ingredients as wood, it being, however, free from grain and knots and anything that might lead to decay or deterioration.

"I prefer to shellac the surfaces of the board invented by me to further protect it and also to improve its appearance, it being understood that in general the surface of my improved board may have imparted to it any improvements and embellishments which wood is capable of receiving."

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